United States Department of the Army

Fort Sam Houston Garrison Command
Directorate of Safety, Environment, and Fire
Environmental Division

ENVIRONMENTAL ASSESSMENT OF CURRENT AND PROPOSED MISSION ACTIVITIES AT CAMP BULLIS, BEXAR AND COMAL COUNTIES, TEXAS

Draft

October 2005

ENVIRONMENTAL ASSESSMENT – CURRENT AND PROPOSED MISSION ACTIVITIES

CAMP BULLIS
BEXAR AND COMAL COUNTIES, TEXAS

Lead Agency: Department of the Army

Proposed Action: Increase usage of Camp Bullis, located in Bexar and Comal counties, Texas, from approximately 750,000 man-days per year (Fiscal Year 2004) to 1 million man-days per year.

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Report Designation: Environmental Assessment

Abstract: The Fort Sam Houston Garrison Commander proposes to increase the utilization of the ranges, maneuver areas, and training areas at Camp Bullis from approximately 750,000 man-days per year (Fiscal Year 2004) to a projected level of 1 million man-days per year. Two alternatives were considered: the proposed action and the no action alternative. The primary users of Camp Bullis are Army soldiers and Air Force airmen stationed at nearby Fort Sam Houston and Lackland Air Force Base. The advent of the Global War on Terrorism and lessons learned from combat operations in overseas theaters have caused the Army and the Air Force to increase the duration and intensity of training given to those soldiers and airmen, resulting in increased utilization of the Camp Bullis facilities.

This environmental assessment analyzes the potential effects to the natural and human environment that could result from implementation of the proposed action or selection of the no action alternative. The potential environmental effects from the implementation of the proposed action are those that would be associated with increased training activities, such as increased use of training areas, maneuver areas, marksmanship ranges and similar activities, and increased consumption of ammunition, subsistence, water, and petroleum products. Resources evaluated include airspace management and use, biological resources, cultural resources, water resources, earth resources, air quality, noise, hazardous materials and waste management, human health and safety, and socioeconomic resources (including environmental justice). Direct and indirect effects were assessed for each environmental resource or issue, considering short-term and long-term project effects and cumulative impacts. Although increased usage of Camp Bullis would affect the natural and human environment, most impacts would be temporary in nature with insignificant permanent impacts.

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EXECUTIVE SUMMARY

This environmental assessment (EA) analyzes the potential environmental consequences resulting from the proposed increase to the training activity level at Camp Bullis, Texas. The proposed action would increase the utilization of the ranges, maneuver areas, training areas, classrooms, and similar facilities from approximately 746,000 man-days per year during Fiscal Year (FY) 2004 to 1 million man-days per year.

This environmental analysis is designed to:

- Help decision makers take environmental factors into consideration when making their decisions; and
- Inform the public about the potential environmental effects of implementing the proposed action, before decisions are made.

Environmental Impact Analysis Process

This EA was prepared in accordance with 32 Code of Federal Regulations (CFR) §651, *Environmental Analysis of Army Actions, Final Rule (29 March 2002).* The regulations are the specific instructions adopted by the Army to implement Section 102 (2) of National Environmental Policy Act (NEPA). The Army is directed to develop its instructions by the President's Council on Environmental Quality (CEQ); those regulations are published at 40 CFR §1500-1508.

Purpose and Need for the Proposed Action

Use of Camp Bullis has increased during recent years due to its tenants and other units needing to train personnel at the unique environment provided by the post. The advent of the Global War on Terrorism and lessons learned from operational experience in overseas theaters have led to a gradually increasing level of training activities. It is foreseeable that the increases would continue for some years to come.

The proposed action is to continue using Camp Bullis as a premier field training venue for combat medical personnel and security forces in response to the military services' increased demand for suitable training facilities to permit realistic, performance-oriented training at rates necessitated by the increased operations tempo brought on by the Global War on Terrorism.

Proposed Action and Alternatives

The training load of Camp Bullis fluctuates as a result of operational and budgetary decisions made by the military services. The utilization rate has been gradually increasing over time. Between FY 1999 and FY 2003, the utilization rate was approximately 702,000 man-days per year. In FY 2004, this rate increased to 746,000 man-days annually. The EA analyzes two alternatives: the proposed action and the no action alternative.

Alternative A – No Action

Under the no action alternative, present operations at Camp Bullis would continue in their current state for an indefinite period of time. Utilization rates would continue within a range of between 675,000 and 750,000 man-days per year. The existing facilities would remain as is and the staffing levels would continue at present levels.

Alternative B – Increase Utilization to 1 Million Man-days Per Year

The proposed action is to increase the rate of utilization at Camp Bullis to 1 million man-days per year.

Under this alternative, no changes to military, civilian, or contractor permanent party personnel are anticipated. No new construction or demolition activities associated with this increased rate of use have been identified; however, periodic overhaul and replacement of facilities as part of the installation's planning, programming, budgeting, and execution system would occur. As the designs of those facilities take shape, they would be assessed under separate environmental analyses as appropriate.

Increased expenditure of ammunition is anticipated under this alternative. Since the mix of trainees is not known at this juncture, it is not known whether increases in consumption of ammunition would correlate with increased utilization. If the increased utilization is due to increases in combat medical training, the rates of ammunition consumption may be less than those that would be expected if the increase is due to increases in combat arms and combat service support training.

Similarly, it is anticipated that increased usage of utilities (e.g., electricity, potable water, sanitary sewer) and increased consumption of subsistence would occur. These increases would generally correlate with increases in utilization.

Summary of Environmental Consequences

It is expected that there would be minor impacts associated with implementation of either the proposed action or selection of the no action alternative. A summary of potential impacts and comparison to the baseline conditions is contained in Table ES-1.

Table ES-1. Summary of Potential Impacts.

Resource Area	Alternative A – No Action	Alternative B – Proposed
Air Quality	No change to existing conditions	Potential increase in criteria pollutants during training, construction, and demolition activities. No significant impacts to local or regional air quality.
Cultural and Visual Resources	No change to existing conditions	No impact to properties listed on National Register of Historic Places, the proposed Camp Bullis Cantonment Historic District, nor to as-yet unidentified archeological resources. Increased use of existing historic wooden buildings and structures. Adherence to Camp Bullis Cultural Resources Management Plan, Camp Bullis Training Regulations, and, carefully designed maintenance programs, will mitigate impacts.
Hazardous Materials and Waste Management	No change to existing conditions	Increased quantities of hazardous wastes would be generated, primarily ammunition, petroleum products, and construction debris. No impact expected since activities would continue to be conducted in accordance with Federal, state, and Army regulations.
Socioeconomics and Environmental Justice	No change to baseline socioeconomic conditions	No significant effects on demographics, employment, or income potential anticipated.
Biological Resources	No change to existing conditions	Temporary displacement of local wildlife during training, construction, and demolition activities. No impact expected since activities would continue to be conducted in accordance with federal, state, and Army regulations, including adherence to Camp Bullis Endangered Species Management Plan.
Earth Resources	No change to existing conditions	Minor impacts to earth resources due to creation of impervious surfaces from training operations since soils in project area have a high erosion potential. If left exposed, gullies could potentially form during stormwater runoff events. No significant effects to geologic resources or karst features would occur.
Airspace Management and Use	No change to existing conditions	No significant effect on airspace management or use. Existing airspace classifications would remain as is and no new training airspace (special-use airspace) would be required.
Noise	No change to existing noise environment	No significant effect to Camp Bullis noise environment. Slight increase in predicted noise exposure from increased use of weapons qualification ranges, explosives simulators, demolition charges, vehicle traffic, and construction equipment.

Table ES-1. Summary of Potential Impacts (cont'd.)

Resource Area	Alternative A – No Action	Alternative B – Proposed
Water Resources	No change to existing environment	No significant effect to existing water resources. The existing Stormwater Pollution Prevention Plan, Spill Prevention and Recovery Plan, and the Pollution Prevention Plan would remain in force.
Human Health and Safety	No change to existing risk exposure	No significant effect on risk exposure. An increased operations tempo and increased training load at Camp Bullis would expose greater numbers of soldiers to slightly more risk than would occur otherwise. Existing Army safety programs and risk management protocols would remain in force.

Table of Contents

Table of Contents (cont'd.)

Page

Table of Contents (cont'd.)

Table of Contents (cont'd.)

List of Figures

List of Tables

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ACMs	asbestos-containing materials
AFB	Air Force Base
AGL	above ground level
AHPA	Archeological and Historic Preservation Act
AICUZ	Air Installation Compatible Use Zone
Air Force	U.S. Air Force
AIRFA	American Indian Religious Freedom Act
AMEDD	Army Medical Departments
AMEDD C&S	Army Medical Command Center and School
APE	area of potential effect
AQCR	Air Quality Control Region
Army	Department of the Army
AR	Army Regulation
ARPA	Archeological Resources Protection Act
ATC	Air Traffic Control
BEA	Bureau of Economic Analysis
BMP	best management practices
BN	Battalion
BRAC	Base Realignment and Closure
C4	Combat Casualty Care Course
CAA	Clean Air Act
CALS	Combat Assault Landing Strip
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CERCLA (Superfund)	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
DA	Department of the Army
DA PAM	Department of the Army Pamphlet
DMRTI	Defense Medical Readiness Training Institute
DMSET	Deployable Medical Systems Equipment for Training
DNL	day-night average sound level
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
DOT	Department of Transportation
DPTM	Directorate of Plans, Training, Mobilization, and Security
DSERTS	Defense Site Environmental Restoration Tracking System
EA	environmental assessment
EIS	environmental impact statement
ENMP	Environmental Noise Management Plan
EO	Executive Order
EOD	Explosive Ordnance Demolition
ESA	Endangered Species Act
ESMP	Endangered Species Management Plan
FAA	Federal Aviation Administration

Acronyms and Abbreviations (cont'd.)

FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FICON	Federal Inter-agency Committee on Noise
FICUN	Federal Inter-agency Committee on Urban Noise
FNSI	Finding of No Significant Impact
FORSCOM	Forces Command
FSH	Fort Sam Houston
FTX	Field Training Exercise
FY	Fiscal Year
GCS	Ground Combat School
ha	hectare
HMMWV	High Mobility Multi-Wheeled Vehicles
HUD	Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
IAAFA	Inter-American Air Force Academy
IENMP	Installation Environmental Noise Management Program
IFR	Instrument Flight Rules
IN	Infantry
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
IT	Institutional Training
ITAM	Integrated Training Area Management
KSAT	San Antonio International Airport
Leq	equivalent sound level
Leq(h)	equivalent sound level metric
MACOM	Major Command
Marine Corps	Marine Corps
MI	Military Intelligence
MOS	Military Occupational Specialty
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	National Airspace System
Navy	U.S. Department of the Navy
NBC	Nuclear, Biological, and Chemical
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLR	Noise Level Reduction
NOA	Notice of Availability
NO_x	nitrous oxides
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PCBs	polychlorinated bipheynls
PM_{10}	particulate matter measuring less than 10 microns in diameter
PMP	Project Management Plan

Acronyms and Abbreviations (cont'd.)

PPBES	Planning, Programming, Budgeting, and Execution System
PPP	Pollution Prevention Plan
RCRA	Resource Conservation and Recovery Act
REC	Records of Environmental Consideration
ROI	region of influence
SARA	Superfund Amendments and Reauthorization Act
SARNAM	Small Arms Range Noise Assessment Model
SEL	sound exposure level
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SoC	Species of Concern
SPL	sound pressure level
SPRP	Spill Prevention and Recovery Plan
SW ARISC	Southwest Army Reserve Intelligence Support Center
SWPPP	Stormwater Pollution Prevention Plan
T&E	threatened and endangered
TCA	Tactical Concealment Area
TCEQ	Texas Commission on Environmental Quality
TDWR	Texas Department of Water Resources
TNRCC	Texas Natural Resources Conservation Commission
TOES	Texas Organization for Endangered Species
TPWD	Texas Parks and Wildlife Department
TRS	Training Squadron
TY	Training Year
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventative Medicine
USAGC	U.S. Army Garrison Command
USC	U.S. Code
USCB	U.S. Census Bureau
USGS	U.S. Geologic Survey
USEPA	Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USTs	undergroundstorage tanks
UXO	unexploded ordnance
VFR	Visual Flight Rules
VIP	Very Important Person
VOC	Volatile Organic Compound
WPA	Works Progress Administration

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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Army Garrison Commander at Fort Sam Houston, Texas proposes to increase the operations tempo of training activities conducted at Camp Bullis, a sub-installation of Fort Sam Houston. The existing level of activity was previously assessed in 2001, and since that document was prepared, world events have substantially changed the nature of the training requirements for the users of small arms ranges, impact areas, and training areas on Camp Bullis.

Prior to undertaking an action, the National Environmental Policy Act (NEPA) (42 United State Code [USC] §4321-4370[d]) requires that federal agencies carefully consider the environmental impacts of proposed actions and make environmental information available to decision makers and the public. This environmental assessment (EA) was prepared in accordance with 32 Code of Federal Regulations (CFR) §651, Environmental Analysis of Army Actions, Final Rule (29 March 2002). These regulations are the specific instructions adopted by the Army to implement the requirements of §102 (2) of NEPA. The Army is directed to develop its instructions by the President's Council on Environmental Quality (CEQ); the CEQ's NEPA regulations are published at 40 CFR §1500-1508.

1.2 BACKGROUND

1.2.1 History

Camp Bullis is located in Bexar and Comal counties, Texas, and is a sub-installation to Fort Sam Houston. It encompasses 27,987 acres approximately 18 miles northwest of Fort Sam Houston, an Army post located in San Antonio, Texas (Figure 1-1). The installation runs approximately 10 miles from north to south and 4 miles from east to west. The surrounding area is primarily rural but is becoming increasingly urbanized as the suburbs of San Antonio have radiated outward to extend closer to Camp Bullis.

The mission of Camp Bullis is to provide target ranges, training areas, airspace, facilities, outdoor recreation programs, and necessary installation support to all of its customers. Camp Bullis provides target ranges and field training areas for the U.S. Army (Army), the U.S. Air Force (Air Force), the Marine Corps (Marine Corps), and the armed forces reserve units in the San Antonio area, as well as serving as an exercise site for many military units from outside the region. Camp Bullis serves primarily as the field training environment for the Academy of Health Science and Defense Medical Readiness Training Institute (DMRTI), a part of the Army Medical Department Center and School (AMEDD C&S) headquartered at Fort Sam Houston. Camp Bullis is also home to the regional Security Police Ground Defense School and Southwest Army Reserve Intelligence Support Center (SW ARISC) activities.

First established in 1917, Camp Bullis has expanded as Fort Sam Houston expanded. During World War II, the camp was an important venue for training infantry troops. Subsequently, the focus at Fort Sam Houston and Camp Bullis began to change toward training of the Army's medical personnel; Fort Sam Houston became the "schoolhouse" for doctrinal training of combat medics and medical students with the camp used as their field training site. The presence of one of the Army's preeminent research and teaching facilities, Brooke Army Medical Center, encouraged this shift away from infantry training toward field medical training. In 1995, the Army transferred these companion installations to the Army Medical Department's (AMEDD) Major Command (MACOM) from the Army Forces Command (FORSCOM) in recognition of the changed focus.

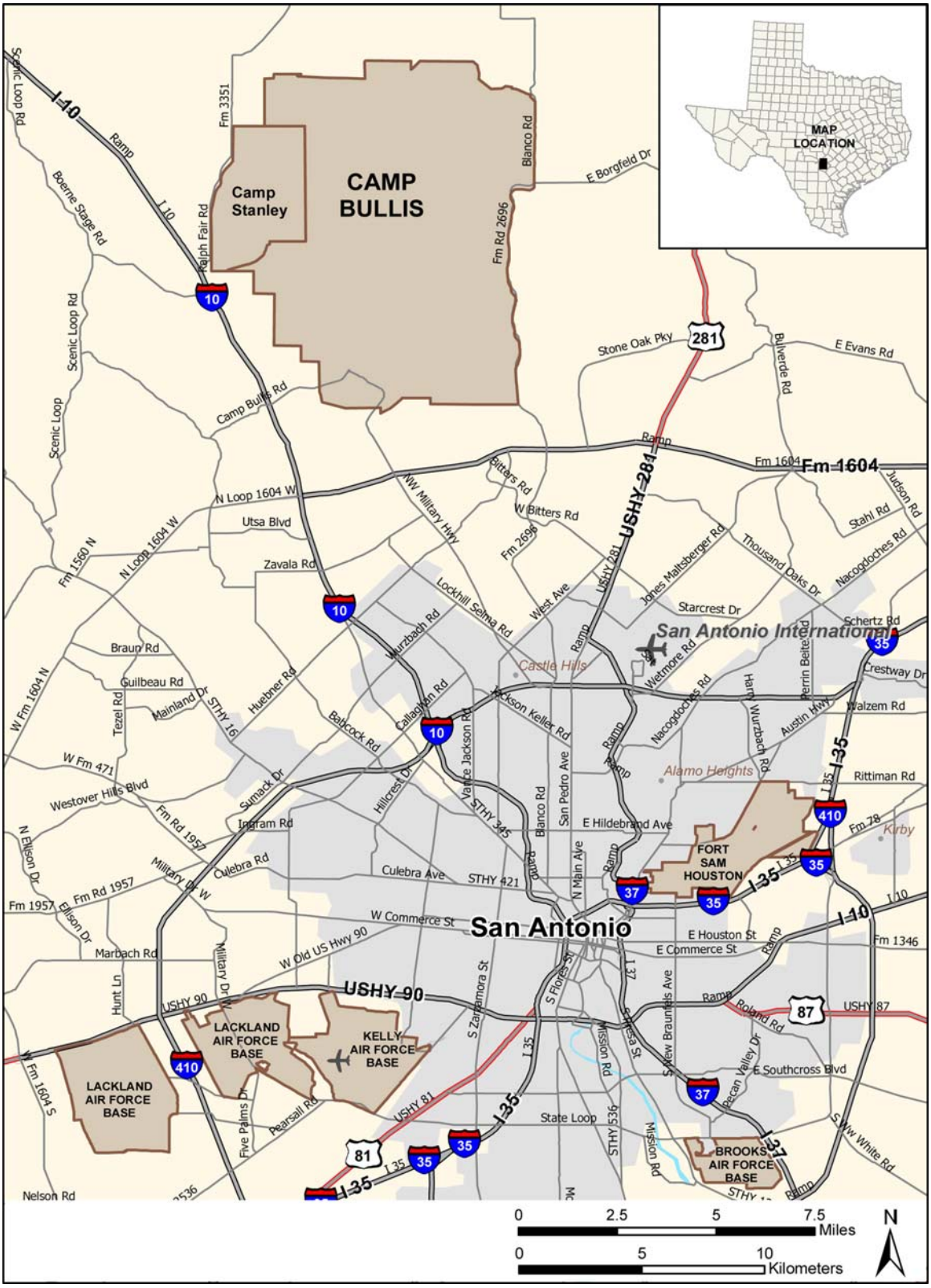

Figure 1-1. General Location of Military Bases in San Antonio Metro Area.

Having been designated as a geographically separate training site of Fort Sam Houston, Camp Bullis was a directorate-level activity of the Garrison Command. In 1990, Camp Bullis was recognized as a separate sub-installation with its own Headquarters Detachment that reports to the Garrison Commander of Fort Sam Houston.

Over time, doctrinal changes in Army force structure led to a shift of combat service support units (e.g., the Quartermaster, Ordnance, Medical Support, and Finance units and branches) from the active component into the Army Reserve and the placement of combat arms units (e.g., the Infantry, Artillery, Armor branches) into the Army National Guard. As a result, Reserve Component forces (which include the National Guard) began to use Camp Bullis quite extensively.

Other military services have noted the value of Camp Bullis as a field training site. During the 1960s, the Air Force began to increase its use of Camp Bullis as a training facility for its airmen undergoing basic training in San Antonio at Lackland Air Force Base (AFB) along with those training to be security police. Similar to the influence that the presence of Brooke Army Medical Center had on Fort Sam Houston, the presence of the Air Force's largest and preeminent medical facility, Wilford Hall, at Lackland AFB has led the Air Force to train its combat medics at Lackland AFB and perform field training at Camp Bullis.

With the end of the Cold War era, many military facilities were closed or had their missions realigned to other installations. This led to increased use of Camp Bullis by Navy and Marine Corps units for field exercises and small arms training. The unit of measure for describing usage of Camp Bullis facilities is the man-day: usage by one service member for one day. By 1990, the camp was accommodating over 500,000 man-days of usage.

1.2.2 Current Mission

Today, Camp Bullis continues in its current mission which is "to provide an unparalleled training infrastructure offering quality range, training facilities and maneuver areas that facilitate tough, realistic training for military and government agencies" (Army 2001b).

In addition to the Garrison Command which serves as the host unit for the installation, a variety of tenants have an ongoing presence on Camp Bullis. Table 1-1 outlines the on-site tenants and briefly describes their role. A more complete description of tenants on Camp Bullis is provided in Section 2. The tenant and itinerant units use the many training areas, small arms ranges, impact areas, a drop zone, and associated training sites to support their training.

1.3 PURPOSE AND NEED FOR THE ACTION

The use of Camp Bullis has increased during recent years due to its tenant and itinerant units needing to train personnel at the unique environment provided by the post. Although mission activities at Camp Bullis have previously been analyzed under NEPA, most recently in 2001, the advent of the Global War on Terrorism has resulted in the need for an increased utilization rate for the facilities. The Department of Defense (DoD) through its military departments has an ongoing and increasing requirement to train soldiers, sailors, airmen, and marines in survival tactics. The nature of current operations in Southwest Asia requires an increased emphasis on indoctrinating basic infantry war-fighting skills to combat service support personnel engaged in convoy operations and medical support.

The purpose of the proposed action is to continue using Camp Bullis as the preeminent field training venue for DoD personnel. The need for the action results from increased operations resulting from the Global War on Terrorism and realignment of missions, forces, and installations.

Table 1-1 Camp Bullis Tenant Units

Organization	Military Department	Mission
343 TRS, Detachment 1 Air Force Ground Combat Skills Course	Air Force – Air Education & Training Command	Train air base security forces
AMEDD C&S DMRTI C4 School Training Parks DMSET 91 W Site E Company	Joint / DoD Delegated to AMEDD C&S Army Army Army Army	AMEDD C&S the doctrinal proponent of Army medical training; DMRTI and 91W: courses offered at Fort Sam Houston and Camp Bullis; DMSET: a training venue; E Company: a logistical support unit for the AMEDD C&S
6th MI Battalion, 3rd BDE, 95th Division (Institutional Training)	Army Reserve	Army Reserve unit drill location; conducts advanced individual training for MI branch at Fort Huachuca, Arizona when mobilized
Southwestern Army Reserve Intelligence Support Center (SW ARISC)	Army Reserve	Operations center for the production of classified analyses products for combatant commanders and other users
HQ 1st BN 141st Infantry (Texas ARNG)	Army National Guard	Infantry – Combat Arms
IAAFA Field Training Site	Air Force	Military school on Lackland AFB for foreign exchange students from allied Latin American nations

91W = Health Care Specialist. Military Occupational Specialty awarded to Army soldiers trained as combat medics.
AMEDD C&S = Army Medical Department Center and School
AMEDD = Army Medical Department
ARNG = Army National Guard
BDE = Brigade
BN = Battalion
C4 = Combat Casualty Care Course
DMRTI = Defense Medical Readiness Training Institute
DMSET = Deployable Mobile Systems Equipment for Training
IAAFA = Inter-American Air Force Academy
MI = Military Intelligence
TRS = Training Squadron

Source: Jennings 2005a

1.4 SCOPE OF THE ENVIRONMENTAL ANALYSIS

The NEPA and CEQ regulations require that federal agencies consider the environmental effects of proposed actions and alternatives during the decision-making process. Preparation of an environmental document (this EA) must precede final decisions regarding the proposed action and be available to inform decision makers and the public of potential environmental consequences/impacts. The development of this EA allows for public consideration and input concerning the implementation of the proposed increase in usage of Camp Bullis facilities. This EA provides the decision makers and the public with the information required to understand the possible future environmental consequences/impacts as a result of implementing the proposed action. The decision to be made, after review of the analysis presented in this EA, would be whether to issue a finding of no significant impact (FNSI) or to proceed with the preparation of an environmental impact statement (EIS) to further quantify and detail the potentially significant impacts resulting from selection of the proposed action. While this EA provides information with which to make better decisions about the proposed action, it does not imply project approval or authorization, which is obtained from the Fort Sam Houston Garrison Commander.

1.5 ORGANIZATION OF EA

This document follows the format established in 32 CFR §651 implementing the CEQ regulations (40 CFR §1502). The document consists of the following sections:

Section 1.0 – Purpose and Need for the Proposed Action: presents a brief description of the background of the installation; the purpose and need for the proposed action; the scope of the environmental review; and a brief description of the EA organization.

Section 2.0 – Description of Proposed Action and Alternatives Considered: provides a detailed description of the proposed action and any alternatives for implementing the proposed action and the criteria used to select these alternatives. Section 2.0 also contains an alternatives comparison matrix.

Section 3.0 – Affected Environment: presents the existing baseline environment or present condition of the areas potentially affected by the alternatives. Each environmental resource potentially impacted by the implementation of the proposed action and/or alternatives is discussed, as well as the regulatory background, if applicable, for each impacted resource area. In accordance with CEQ regulations, only those resource areas potentially impacted by implementation of the proposed action will be examined in detail.

Section 4.0 – Environmental Consequences: provides the scientific and/or analytical basis for comparing the alternatives and describes the probable consequences of each alternative on relevant environmental attributes.

Section 5.0 – Cumulative Impacts: presents the context of other activities that are not part of the action but which are nonetheless occurring in the region in order to assess whether the probable consequences noted in Section 4.0 in conjunction with these other activities would have a cumulative impact on the baseline environment.

Section 6.0 – List of Preparers: provides a list of the document preparers and contributors.

Section 7.0 – List of Persons and Agencies Contacted: provides a list of persons/agencies contacted in the preparation of this EA.

Section 8.0 – References: provides a list of references used in the preparation of this EA.

Appendices: provides background and supporting information to this EA, as necessary.

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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES CONSIDERED

This section of the EA describes the proposed action and the alternatives developed by the Garrison Command staff at Fort Sam Houston and Camp Bullis. This section also describes the process used to objectively identify the reasonable alternatives carried forward for detailed environmental analysis. A comparative summary of the alternatives is presented depicting whether or not they meet selection criteria developed to satisfy the purpose and need.

When the mission activities at Camp Bullis were previously assessed, the number of man-days was approximately 700,000 man-days in FY 1999 (Army 2001a). This level fluctuated up and down in any given year as budgetary variables and global deployments influenced the ability of units to use the facilities. The advent of the Global War on Terrorism and its resultant increase in military budgets and force structure led to an increased level of activity. Combined with increased funding, a fundamental reshaping of military doctrine has resulted from the experience of combat and combat service support units in Southwest Asia, particularly in the Iraq and Afghanistan theaters of operation.

The Army has altered significantly its training requirements to foster what it calls *Warrior Ethos* in which every soldier, whether a combat infantryman or a truck driver, is a soldier/warfighter first. To achieve this, the Army is directing marksmanship training and use of field training exercises be increased for those military occupational specialties that previously were thought less likely to encounter hostile enemy action. Wartime experience in Iraq in particular has demonstrated that the soldiers running the Army's logistical system (mechanics, truck drivers, cooks, clerks, network administrators, and medics) require realistic training under simulated combat conditions as much as their infantry, armor, and artillery brethren do. The Air Force, while not using the same terminology, has also changed the training its supporting airmen receive, particularly security police and medical specialists, again emphasizing survival under hostile fire. This shift in doctrine and changed emphasis by its military users represents a qualitative shift in training which is also generating an increased demand for Camp Bullis training facilities as the users add additional days to the curricula of the courses they give.

2.1 IDENTIFICATION OF SELECTION CRITERIA

In an effort to satisfy the purpose and need for the proposed action, several selection criteria were developed to compare and contrast the alternative ways of fulfilling the objectives of the proposed action in accordance with 32 CFR §651. Those specific criteria include the following:

1. **The proposed action or its alternatives must be located on a similar-sized parcel of real estate within 1 hour travel time of the Brooke Army Medical Center and Wilford Hall.** These institutions are the respective "schoolhouse facilities" for the Army and Air Force medical training, teaching those soldiers and airmen in the practice of nursing and medicine under simulated combat conditions in a field setting. Any field training venue for the curricula that is further from the institutions than 35 miles imposes a significant training challenge. The logistical and transportation issues inherent in geographically separated facilities already diminishes the amount of field training time available; any further distance would require lengthening the courses.

2. **The proposed action or its alternatives may not result in an underutilization of the existing training facilities at Camp Bullis to such an extent that its usage drops below 500,000 man-days annually.** Relocating the DoD courses of

instruction on medical field training, the Air Force security forces field training course, and other tenant units on Camp Bullis to a different venue would become a *de facto* realignment of units and activities at Camp Bullis. Closing a military facility or realigning its missions is an action that is conducted under the auspices for the Base Realignment and Closure (BRAC) process and entails an assessment by DoD of its priorities for national defense needs and supporting facilities, infrastructure, force structure, and procurement. Such an assessment is beyond the scope of this document and is not authorized under existing law outside of a BRAC process.

3. **The proposed action or its alternatives must allow for surge capacity of 10 percent to support contingency operations associated with the Global War on Terrorism.** The increased rates of mobilization of Reserve Component forces and the changing nature of operations in Southwest Asia have created an increased demand for realistic, demanding field training of combat service support units in the Army and the other services. The current force structure of the Army is predicated upon widespread mobilization of Reserve Component units during large-scale contingency operations involving the deployment of multiple divisions at a time. Of the Army's 10 active duty divisions, nine are either presently deployed in Southwest Asia under Operations Enduring Freedom and Iraqi Freedom, or returning from deployment, or preparing to deploy. As a result, during the two years since deployments began to that theater, the President has exercised his authority under law to mobilize Reserve Component forces to the extent that they presently constitute over half of the forces in the theater.

   Prior to the deployment of Reserve Component forces in a contingency operation, a significant period of post-mobilization training is required to ensure the personnel, logistical, and training readiness of these units as they transition from their former reserve status onto active duty. Fort Sam Houston is a mobilization station that FORSCOM and 5th Army use, primarily for mobilization of medical units. Part of that post-mobilization, pre-deployment training for these units occurs at Camp Bullis. Any alternative, therefore, must allow sufficient capacity to permit mobilization of units to Fort Sam Houston as outlined in the FORSCOM mobilization planning documents. Based on the projected mobilization load and throughput identified for this installation, a 10 percent surge capacity is necessary in addition to the ongoing activities associated with the medical field training, security forces training, and routine drill weekend training (Williams 2005).

2.2 DESCRIPTION OF PROPOSED ACTION

The Fort Sam Houston Garrison Command proposes to authorize a level of usage of facilities at Camp Bullis of 1,000,000 man-days annually. This section outlines the baseline conditions at Camp Bullis as of Training Year 2004, which ran from October 1, 2003, to September 30, 2004 (No Action Alternative), and describes the proposed increase of those activities (Proposed Action). An alternative briefly considered but not carried forward for detailed analysis, closing the installation, is also presented.

2.2.1 Current Operations (Alternative A)

The no action alternative serves as the conceptual baseline for the analysis of the proposed action. Under the no action alternative, present training operations and installation usage would continue in their current state for an indefinite period of time. No increased usage would occur. Although this alternative does not meet the selection criteria that would satisfy the purpose and need for the action, the no action alternative is presented to depict the baseline conditions. The CEQ and

Army regulations that govern the NEPA process require the presentation and analysis of a no action alternative to provide the decision maker and the public a benchmark against which the proposed action may be compared.

The activities occurring on Camp Bullis fall into three broad categories: (1) base operations and logistical support for host, tenant, and itinerant units; (2) classroom facilities and training site "mock-ups" for non-tactical training for tenant units; and (3) operation of small arms ranges, impact areas, maneuver areas, and training areas for tactical field maneuvers and training by military units (tenant and itinerant) of various sizes and configuration. Users of the training facilities at Camp Bullis represent all military services and some non-military agencies (e.g., local law enforcement services). In this document, the small arms ranges, impact areas, maneuver areas, and training areas on Camp Bullis are collectively referred to as range facilities in order to distinguish the areas from the warehouse, administrative office, and barracks facilities on the post, which are commonly referred to as a cantonment area. On Camp Bullis, the cantonment area lies in the vicinity of the southwest corner of the post.

2.2.1.1 *Current Usage*

In FY 2004, 746,619 man-days of training occurred on Camp Bullis. Of this total, active army units accounted for 35 percent, active Air Force accounted for 36 percent, and the balance consisted of users from other components (e.g., Reserve, National Guard) and services. The daily average generally is at its lowest in the winter and peaks during the summer. This level of training activity is supported by a permanent staff of 502 military and civilian employees (including contractor personnel). Tables 2-1.a and 2-1.b present data showing the training activity at Camp Bullis for FY 2003 and FY 2004; Tables 2-2.a and 2-2.b list the permanent party staff present on Camp Bullis during the same periods.

As shown in the usage tables, many itinerant units also train at Camp Bullis. Some, such as the 277th Engineering Company, are reserve units that perform weekend drills at a reserve center in San Antonio and use Camp Bullis once or twice per year for field training and weapons qualification activities. Others are active duty units such as those aboard ships stationed at Naval Station Ingleside in Corpus Christi, Texas that come to Camp Bullis to use weapons qualification ranges. The itinerant units are more apt to train on individual soldierization skills, such as marksmanship and land navigation skills, and small-scale unit training tasks rather than engage in full-scale combined arms exercises.

The activities that are associated with these training formats are those traditionally found in military training environments: disturbance and excavation of soils as soldiers dig fighting positions; clearing of vegetation as soldiers move through training areas; expenditure of ammunition, and consumption of petroleum products, subsistence, and water, electricity, and similar utilities. Table 2-3 presents data pertaining to consumption of ammunition, subsistence, fuel and petroleum products, and utilities.

2.2.1.2 *Camp Bullis Headquarters Detachment and Fort Sam Houston Garrison Directorates (Base Operations and Logistical Support Activities)*

The Camp Bullis Headquarters Detachment is the host unit on the installation and, as such, has responsibility for providing administrative and logistical support to units training on Camp Bullis, whether tenant or itinerant. Functions performed by the Headquarters Detachment include command and control of detachment military, civil service, and contractor personnel in order to staff the organizations that carry out the mission of the post.

Table 2-1.a. Total Monthly and Average Daily Use of Camp Bullis by Personnel (FY 2004).

ACTIVITY		OCT 31 days	NOV 31 days	DEC 31 days	JAN 31 days	FEB 28 days	MAR 31 days	APR 30 days	MAY 31 days	JUN 30 days	JUL 31 days	AUG 31 days	SEP 30 days	TOTAL YTD 365 days
AD Army	Mo. Total	22,543	29,254	15,186	21,545	19,940	34,648	19,133	21,159	19,285	26,737	14,539	23,242	267,211
Average	Daily Avg.	727	975	490	695	712	1,118	638	683	643	862	469	775	732
AD AF	Mo. Total	25,510	21,105	24,748	22,863	18,306	18,713	27,566	25,599	19,287	30,632	19,994	16,604	270,927
Average	Daily Avg.	823	704	798	738	654	604	919	826	643	988	645	553	742
Other AD	Mo. Total	346	237	123	63	354	189	305	436	101	61	505	384	3,104
Average	Daily Avg.	11	8	4	2	13	6	10	14	3	2	16	13	9
Reserves	Mo. Total	5,026	9,325	1,676	3,008	1,673	4,541	6,555	2,551	2,208	5,041	27,177	3,551	72,332
Average	Daily Avg.	162	311	54	97	60	146	219	82	74	163	877	118	198
Nat Guard	Mo. Total	2,923	1,606	2,005	1,978	2,001	5,572	1,520	1,486	88	13,855	2,507	560	36,101
Average	Daily Avg.	94	54	65	64	71	180	51	48	3	447	81	19	99
ROTC	Mo. Total	3,190	1,212	90	270	530	1,629	570	2,007	35,856	3,260	300	1,125	50,039
Average	Daily Avg.	103	40	3	9	19	53	19	65	1,195	105	0	38	137
AVN TNG	Mo. Total	1,074	305	763	494	214	754	214	280	40	822	223	167	5,350
Average	Daily Avg.	35	10	25	16	8	24	7	9	1	27	7	6	15
CIV ORG	Mo. Total	4,321	4,579	2,660	4,100	1,986	2,675	2,731	3,158	4,361	5,536	2,804	2,662	41,555
Average	Daily Avg.	139	153	86	132	70	86	91	102	145	179	90	89	114
Sub-Total	Mo. Total	64,933	67,623	47,251	54,321	44,986	68,721	58,594	56,676	81,226	85,944	68,049	48,295	746,619
Average	Daily Avg.	2,095	2,254	1,524	1,752	1,607	2,217	1,953	1,828	2,708	2,772	2,195	1,610	2,046
YTD	Mo. Total	64,933	132,556	179,807	234,128	279,114	347,835	406,429	463,105	544,331	630.275	698,324	746,619	
Average	Daily Avg.	2,095	2,173	1,954	1,903	1,861	1,911	1,917	1,906	1,994	2,073	2,085	2,046	

Note: FY 2004 had 366 days (29 in February); however, the source data from Camp Bullis does not indicate such.

AD = Active Duty
AF = Air Force
AVN TNG = Aviation Training
ROTC = Reserve Officers Training Corps
YTD = Year to Date

Source: Jennings 2005a

Table 2-1.b. Total Monthly and Average Daily Use of Camp Bullis by Personnel (FY 2003).

ACTIVITY		OCT 31 days	NOV 31 days	DEC 31 days	JAN 31 days	FEB 28 days	MAR 31 days	APR 30 days	MAY 31 days	JUN 30 days	JUL 31 days	AUG 31 days	SEP 30 days	TOTAL YTD 365 days
AD Army	Mo. Total	20,020	20,414	13,808	14,103	13,363	21,741	22,355	18,928	16,557	18,555	16,105	21,827	217,776
Average	Daily Avg.	646	680	445	455	477	701	745	611	552	599	520	728	597
AD AF	Mo. Total	28,507	31,735	7,869	20,994	21,372	26,921	28,148	27,312	26,170	27,857	28,636	25,922	301,443
Average	Daily Avg.	920	1,058	254	677	763	868	938	881	872	899	924	864	826
Other AD	Mo. Total	250	282	15	0	170	188	165	299	335	203	154	237	2,298
Average	Daily Avg.	8	9	0	0	6	6	6	10	11	7	5	8	6
Reserves	Mo. Total	2,231	5,632	1,584	3,480	2,573	4,823	5,296	7,023	6,582	18,852	9,415	2,363	69,854
Average	Daily Avg.	72	188	51	112	92	156	177	227	219	608	304	79	191
Nat Guard	Mo. Total	1,551	2,696	2,564	1,647	5,624	5,925	1,734	1,828	280	365	3,532	3,668	31,414
Average	Daily Avg.	50	90	83	53	201	191	58	59	9	12	114	122	86
ROTC	Mo. Total	770	789	300	1,110	1,575	1,470	1,690	310	16,764	1,350	3,642	1,260	31,039
Average	Daily Avg.	25	27	10	36	56	47	56	10	559	44	0	42	85
AVN TNG	Mo. Total	347	174	46	340	6	97	289	264	252	213	396	396	2,820
Average	Daily Avg.	11	6	1	11	0	3	10	9	8	7	13	13	8
CIV ORG	Mo. Total	2,339	3,915	3,979	1,371	1,179	2,405	3,339	2,604	9,822	1,794	4,336	3,941	41,024
Average	Daily Avg.	75	131	128	44	42	78	111	84	327	58	140	131	112
Sub Total	Mo. Total	56,015	65,646	30,165	43,045	45,862	63,570	63,016	58,568	76,762	69,189	66,216	59,614	697,668
Average	Daily Avg.	1,807	2,188	973	1,389	1,638	2,051	2,101	1,889	2,559	2,232	2,136	1,987	1,911
YTD.	Mo. Total	56,015	121,661	151,826	194,871	240,733	304,303	367,319	425,887	502,649	571,838	638,054	697,668	
Average	Daily Avg.	1,807	1,994	1,650	1,584	1,605	1,672	1,733	1,753	1,841	1,881	1,905	1,911	

Note: FY 2004 had 366 days (29 in February); however, the source data from Camp Bullis does not indicate such.

AD = Active Duty
AF = Air Force
AVN TNG = Aviation Training
ROTC = Reserve Officers Training Corps
YTD = Year to Date

Source: Jennings 2005a

Table 2-2.a. Camp Bullis Monthly Staff/Employment Data (FY 2004).

Tenant Organization	OCT 31 days	NOV 31 days	DEC 31 days	JAN 31 days	FEB 28 days	MAR 31 days	APR 30 days	MAY 31 days	JUN 30 days	JUL 31 days	AUG 31 days	SEP 30 days
HQ, Camp Bullis	34	32	32	32	32	29	29	29	29	26	26	26
MWR	7	7	7	7	7	12	12	7	12	5	5	5
AHS (E Co, Academy Bn)	57	76	76	76	76	75	75	75	75	80	80	80
AHS DEMSET	10	9	9	9	9	10	10	10	10	10	10	10
AHS Motorpool	16	15	15	15	15	12	12	12	12	15	15	15
Soldier Medic Training Site (91B10)	18	18	18	18	18	18	18	18	18	21	21	21
Air Force Aid Station	10	10	10	10	10	9	9	9	9	9	9	9
Army Clinic	6	6	6	6	6	6	6	6	6	12	12	12
Lackland Dispensary	49	49	49	49	49							
DMRTI (C-4)	6	4	4	4	4	49	49	49	49	41	41	41
Military Police/DoD Police	55	55	55	55	55	6	6	6	6	6	6	6
470th MI Group						150	150	150	150	150	150	150
6th MI Bn	4	4	4	4	4	5	5	5	5	4	4	4
SW ARISC	21	21	21	21	21	23	23	23	23	23	23	23
National Guard Armory	9	9	9	9	9	9	9	9	9	9	9	9
Buildings & Grounds (DPW)	4	5	5	5	5	5	5	5	5	5	5	5
Land Management (DPW)	10	10	10	10	10	10	10	10	10	10	10	10
Dining Facility	26	26	26	26	26	26	26	26	26	20	20	20
Fire Department	14	14	14	14	14	14	14	14	14	6	6	6
Post Exchange (AAFES)	2	2	2	2	2	3	3	3	3	2	2	2
343 TRS (GCS)	48	48	48	48	48	48	48	48	48	48	48	48
TOTAL STAFF LEVELS	406	420	420	420	420	519	519	514	519	502	502	502

Note: FY 2004 had 366 days (29 in February); however, the source data from Camp Bullis does not indicate such.
AHS = Academy of Health Sciences
DEMSET = Deployable Medical Systems Equipment for Training
HQ = Headquarters
MWR = Morale Welfare and Recreation

Source: Jennings 2005a

Table 2-2.b Camp Bullis Monthly Staff/Employment Data (FY 2003).

Tenant Organization	OCT 31days	NOV 31 days	DEC 31 days	JAN 31 days	FEB 28 days	MAR 31 days	APR 30 days	MAY 31 days	JUN 30 days	JUL 31 days	AUG 31 days	SEP 30 days
HQ, Camp Bullis	30	30	30	30	30	30	30	30	32	32	32	32
MWR	3	3	3	3	3	3	3	3	7	7	7	7
AHS (E Co, Academy Bn)	76	76	76	76	76	76	76	76	76	76	76	76
AHS DEMSET	10	10	10	10	10	10	10	10	9	9	9	9
AHS Motorpool	16	16	16	16	16	16	16	16	15	15	15	15
Soldier Medic Training Site (91B10)	4	4	4	4	4	4	4	4	18	18	18	18
Air Force Aid Station									10	10	10	10
Army Clinic									6	6	6	6
Lackland Dispensary	10	10	10	10	10	10	10	10	49	49	49	49
DMRTI (C-4)	13	13	13	13	13	13	13	13	4	4	4	4
Military Police/DoD Police	4	4	4	4	4	4	4	4	55	81	55	55
6th MI Bn	3	3	3	3	3	3	3	3	4	4	4	4
SW ARISC	24	24	24	24	24	24	24	24	21	21	21	21
National Guard Armory	19	19	19	19	19	19	19	19	9	9	9	9
Buildings & Grounds (DPW)	9	9	9	9	9	9	9	9	5	5	5	5
Land Management (DPW)	8	8	8	8	8	8	8	8	10	10	10	10
Dining Facility	26	26	26	26	26	26	26	26	26	26	26	26
Fire Department	10	10	10	10	10	10	10	10	14	14	14	14
Post Exchange (AAFES)	2	2	2	2	2	2	2	2	2	2	2	2
343 TRS (GCS)	98	98	98	98	98	98	98	98	48	48	48	48
TOTAL STAFF LEVELS	267	267	267	267	267	267	267	267	420	446	420	420

AHS = Academy of Health Sciences
DEMSET = Deployable Medical Systems Equipment for Training
HQ = Headquarters
MWR = Morale Welfare and Recreation

Source: Jennings 2005a

Table 2-3. Ammunition, Subsistence, Fuel, and Utility Consumption Data (FY 2000-2005).

Commodity	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Ammunition (rounds per year) 5.56 mm 7.62 mm 9 mm Other Ammunition Total	N/A	N/A	2,257,405 2,613,556 297,779 66,675 5,235,415	N/A	N/A
Subsistence (meals per year)	N/A	N/A	178,489	204,928	N/A
Fuel (gallons per year)	N/A	N/A	N/A	N/A	N/A
Utilities Water (kgal/yr.) Sewage (kgal/yr.)	27,556 15,778	29,884 13,671	37,693 12,796	65,251 9,431	48,742 14,230

Kgal = 1000 gallon
mm = millimeter
N/A = Not available

Source: Jennings 2005b – Ammunition Consumption
Army 2005a – Subsistence Data
Schlatter 2005c – Utility Consumption

The Fort Sam Houston Garrison Command maintains forward teams from its directorates that are detailed to Camp Bullis to assist the Headquarters Detachment in performing roles. For example, the Directorate of Plans, Training, and Mobilization (DPTM) at Fort Sam Houston is charged with the responsibility for managing the ranges, impact areas, training areas, and maneuver areas at both installations. The Range Control, Range Management, and Integrated Training Area Management (ITAM) branches carry out this responsibility by exercising control over range scheduling and have the responsibility for creating new ranges and identifying maintenance and repair needs. These activities ultimately come under the control of the Commander, Camp Bullis.

The Readiness and Logistics Business Center at Fort Sam Houston bears a similar overall responsibility for provision of various facets of supply, maintenance, and transportation services for both installations. The supply branch at Camp Bullis maintains warehouse facilities for storage of subsistence, operates dining facilities, and maintains fueling points for tactical and non-tactical vehicles for users at Camp Bullis.

The functions and operation of public safety; medical treatment clinics; Morale, Welfare and Recreation (MWR) activities; and other ordinary installation "life support" activities similarly occur on both installations, with management responsibility resting with the Fort Sam Houston Garrison Command. In addition, certain DoD field operating agencies have a presence on Camp Bullis, the most prominent of which is the Army/Air Force Exchange Service which manages a post exchange and a military clothing sales outlet.

2.2.1.3 *Classroom, Storage, and Other Non-Tactical Facilities*

Camp Bullis is home to six tenant units that have permanent facilities and regularly use its range facilities. In addition, there are units stationed at Fort Sam Houston, at Lackland AFB, or in Army Reserve facilities in San Antonio that regularly use Camp Bullis as their principal venue for field training. A brief description of the mission and activities of the Camp Bullis tenant units follows.

343 Training Squadron, Detachment 1

The 343 Training Squadron (TRS) is an Air Force squadron whose mission is to train airmen attending the Air Base Ground Combat School (GCS) at Lackland AFB. Airmen who graduate

from the courses offered by the GCS become security force personnel at Air Force bases and other facilities. Airmen attending these courses at Lackland AFB perform the weapons qualification and field training portions of the courses at Camp Bullis.

Detachment 1 of the 343 TRS operates a compound on Camp Bullis to house and instruct students in security force operations. Located in the northwest section of the cantonment area, the compound includes dormitory facilities, a dining facility, a supply and armory building, and administrative, classroom, and clinic space. The activities in which the 343 TRS engages and the facilities that they operate are more fully described in a 1995 EA prepared in conjunction with the relocation of the GCS from Fort Dix, New Jersey (U.S. Army Corps of Engineers [USACE] 1995a).

Army Medical Command Center and School

The role of Army medical personnel is twofold: (1) to support combatant commanders as advisors and personnel augmenting war-fighting units in the field and (2) to operate fixed medical facilities such as hospitals, clinics, and pharmacies. This division of roles and responsibilities underlies the distinction between the AMEDD and the Army's Medical Command (MEDCOM). AMEDD is a Department of the Army secretariat-level department, headquartered within the Pentagon; MEDCOM is a Major Command of the Army, headquartered at Fort Sam Houston. AMEDD is responsible for maintaining the overall health of the Army's soldiers and developing a trained force of medical personnel. The AMEDD C&S, also located on Fort Sam Houston, is the Army's "schoolhouse" for medical support personnel and is focused on training of medical personnel. AMEDD C&S develops and disseminates doctrine and conducts individual and collective training of soldiers in medical specialties. The various units train medical personnel in an academic, clinical, and field setting. Since medics are soldiers first, basic soldierization skills are taught; Camp Bullis is the field training setting where those skills are taught.

- Training Parks – To train the Army's medical personnel in a realistic environment, the AMEDD C&S has constructed several permanent facilities at Camp Bullis, called training parks. These include a Leadership Reaction Course; Rappel Tower; a Nuclear, Biological, and Chemical (NBC)/Preventative Medicine; a Litter Obstacle Course; and Medical Combat Lanes. The construction and operation of these facilities was previously assessed in 1995.

- DMSET – The site is a 20-acre fenced compound that sits northwest of the cantonment area. It includes administrative, classroom, and storage buildings and an elevated 130-foot, 200,000-gallon water tank and building.

- Defense Medical Readiness Training Institute (DMRTI) C4 – The DMRTI is a tri-service military command tasked with conducting and coordinating training in areas that enable military medical department personnel, both active duty and reserve, to better perform the wide variety of challenging medical and health service support missions they are faced with around the world. The Secretary of Defense established DMRTI as an executive agency under the Secretary of the Army. That authority has been delegated through the Army Surgeon General to the Commanding General, AMEDD C&S.

  Among the several courses offered by DMRTI, the Combat Casualty Care Force (C4) is one that relies extensively upon the field setting offered at Camp Bullis. The C4 is a tri-service medical readiness training

course emphasizing joint doctrine concepts and inter-service interoperability concepts in the treatment of combat casualties. Its objective is to enable officers with little or no field experience to provide Levels I and II medical care for tactical units under combat conditions. It is a nine-day course that culminates in a Field Training Exercise (FTX). DMRTI offers 12 iterations per year, with an approximate enrollment of 130 students and 30 cadre members.

6th Military Intelligence Battalion, 3rd Brigade, 95th Division - Institutional Training

The 6th Military Intelligence (MI) Battalion (BN) is a U.S. Army Reserve (USAR) unit located on Camp Bullis. As part of the USAR Institutional Training Division (IT), it operates a school that teaches Reserve Component military occupational specialty (MOS) courses, non-commissioned officer career courses, and officer career progression courses. There are three full-time support staff and approximately 55 drilling reservists attending training assemblies on one weekend per month. The 55 drilling reservists are instructors and support staff that teach other reservists attending the courses.

Southwest Army Reserve Intelligence Support Center

The Southwest Army Reserve Intelligence Support Center (SW ARISC) is an operations center wherein classified information is analyzed and disseminated over secure networks by Reserve Component personnel to support the intelligence needs of military commanders worldwide. An ARISC facility is a sensitive compartment information facility capable of securing information at various levels of classification. There are eight such centers in the continental United States.

The SW ARISC mission is to provide battle-focused intelligence training and support to improve technical intelligence skills and readiness of its reservist soldiers. It has a permanent staff of 26 personnel and an annual training load of 1,766 military intelligence soldiers. There are no storage facilities, and the single-building, fenced compound is located in the cantonment area.

1st Battalion (Mechanized), 141st Infantry Regiment (Texas National Guard)

The 1st BN, 141 Infantry (IN) Regiment (Regt.) is a Texas Army National Guard (TARNG) unit also stationed at Camp Bullis. The National Guard Armory is located in the cantonment area. The 1st BN has an authorized strength of approximately 760 traditional guardsmen who drill on a similar schedule as the reservists mentioned above, along with a full-time support staff of approximately 11 soldiers and 11 civil service technicians. The unit's mission as a mechanized infantry force is to employ M2 Bradley Infantry Fighting Vehicles (armored personnel carrier) that each carry a crew of three operators and six infantry soldiers who dismount and engage the enemy. Over time, the unit will be converting to the Stryker combat vehicle, a wheeled personnel carrier as opposed to a tracked vehicle. In the interim, the usage of Bradleys is diminishing, and the unit is training more on convoy operations involving wheeled vehicles (e.g., 2.5-ton trucks, high mobility multi-wheeled vehicles [HMMWVs], etc.) which reflects the ongoing nature of counter-insurgency operations in an urban environment.

The 1st BN/141 IN Regt. uses maneuver areas on Camp Bullis to practice its offensive and defensive battle tactics, employing a variety of target tracking and scoring systems to evaluate the effectiveness of its soldiers and equipment.

Inter-American Air Force Academy Field Training

The Inter-American Air Force Academy (IAAFA) is located on Lackland AFB and serves as a school for military exchange students from Latin American allied nations. A variety of military courses are offered, including commissioned and non-commissioned officer professional development courses, flight instruction, logistics and security personnel training, and information

systems. The courses are conducted in Spanish. The IAAFA maintains a 2,000-square-foot building and associated parking area at Camp Bullis in which weapons and equipment associated with the facility are stored. The Air Force assessed the environmental effects associated with the relocation of the academy to Lackland AFB, including its Camp Bullis field training venue, in 1995 (Air Force 1995a).

Basic Combat Convoy Course (BC3) and Basic Combat Convoy Course with Lifesaving (BC3+)

The BC3/BC3+ courses' training standards include small arms weapons qualification, weapons employment, individual and team movement, map/compass/Global Positioning Systems, navigation, troop leadership procedures, convoy operations, and urban warfare through realistic training scenarios. The purpose of this action is to support the new mission requirement for the Air Force, directed by the Joint Staff, to provide Air Force transporter personnel to engage in convoy missions in conjunction with the United States Army. The BC3/BC3+ training courses prepare Air Force personnel for deployment into the theatre of operations by developing the transporters individual ability to "Shoot, Move, and Communicate." The BC3/BC3+ courses are evolving from Light/Medium Truck Companies to Medium Truck Detachments. Therefore, vehicle requirements will be increased by 15 20-ton tractors and 17 trailers. For training purposes, only the tractors will be driven on post while tractors and trailers will be driven off-post.

Non-DoD Tenants

There are also non-DoD tenants on Camp Bullis. The Federal Aviation Administration (FAA) uses a parcel of real estate for a radar installation and radio transmitting facilities associated with air traffic control departure and arrival sequencing to aircraft throughout the San Antonio metropolitan area. The San Antonio River Authority uses real estate for flood control projects, and the Texas Commission on Environmental Quality (TCEQ) maintains an air quality monitoring station on Camp Bullis.

2.2.1.4 *Operation of Small Arms Ranges, Maneuver Areas, Training Areas, and Impact Area for Supported Units*

The nature and characteristics of the activities that occur in conjunction with military training on Camp Bullis vary depending upon the type of military unit and the scenario to which it is training. An infinite number of permutations is possible. To reasonably bound the analyses presented in Section 4 of this document, certain prototypical activities are described as part of the no action and proposed action alternatives.

Small arms ranges refers to weapons ranges on which small caliber arms are fired. Broadly speaking, the term small arms refers to any weapon that can be carried by one or two soldiers. Examples range from weapons issued to every soldier in a unit (e.g., the M-16 rifle which fires a 5.56 caliber bullet, the M9 pistol which fires a 7.62 caliber bullet) to weapons issued at the squad and platoon level (e.g., the M249 Squad Automatic Weapon and the M60 Machine Gun). Light weaponry (a subset of small arms) refers to more specialized devices issued to engage the enemy's equipment and large-scale formations. Examples include heavy machine-guns, grenade launchers, small mortars, mobile anti-aircraft and anti-tank guns, mobile rocket launchers, and shoulder-fired anti-aircraft missile launchers. Munitions used with these weapons (such as bullets, grenades, and missiles), land mines, and explosives are also encompassed by the term. The term does not refer to weapons mounted on tracked or wheeled vehicles. In contrast, an impact area is designed and created for the purpose of firing munitions from heavy weapons and ordnance, whether fired from wheeled or tracked vehicles, such as a tank, or from aircraft.

A training area is real estate set aside for teaching individual skills and small unit tactics. This may include dismounted (marching) formations of small units engaged in simulated patrols and

combat operations, land navigation and orienteering courses, bivouac sites, convoy and vehicle operating areas and similar activities.

A maneuver area is real estate set aside for large-scale combined arms exercises (i.e., involving use of infantry artillery, aviation units) involving force on force that test the concepts learned collectively. In a training area, the emphasis is on teaching and evaluating individual skills; in a maneuver area, the emphasis is on conducting large scale unit exercises to test the battle operating systems and procedures and to evaluate units as a collective whole.

Field training at Camp Bullis takes on various formats, depending upon the purposes for which the soldier, sailor, airman, or marine is being trained. Training in survival, escape, evasion, and basic combat skills occurs. This may include use of drop zones for airborne, paratrooper insertions and extractions, land navigation compass courses, a gas chamber to test skills in donning protective masks, obstacle courses, driver training and convoy operations courses, tracked vehicle maneuver areas, and even a combat assault landing strip (CALS) wherein a C-130 Hercules aircraft can land, off-load troops, and quickly depart. Other types of training include explosive ordnance demolition (EOD) disposal and austere construction techniques involving a quarry, both performed by Army engineering companies. In short, the nature of the training that occurs on Camp Bullis varies with the units that use its facilities. Given its size and variety of training facilities, many small-to-medium scale unit combat scenarios can be simulated.

Camp Bullis has 17 small arms ranges, 1 heavy demolition range, 11 maneuver areas, and 26 training areas (see Figures 2-1 and 2-2 for the locations and purposes of the ranges, training areas and impact area on Camp Bullis).

2.2.1.5 *Range Management, Maintenance, and Rehabilitation*

As part of its role in providing training facilities, the Garrison Headquarters ITAM branch administers a program that plans, schedules, and maintains the ranges, balancing the interests of environmental stewardship with mission accomplishment. The program is designed to provide a management and decision-making process to integrate Army training and other mission requirements for land use with sound natural resource management of land. The goal is to achieve optimum, sustainable use of training lands by inventorying and monitoring land condition, integrating training requirements with land capacity, educating land users to minimize adverse impacts, and providing for training land rehabilitation and maintenance.

In conjunction with what is traditionally known as ITAM, Camp Bullis has a Tactical Concealment Area (TCA) program which is a program for rehabilitating the lands and ecosystem from damage that occurred as a result of previous use. As of 1999, there were 3,000 acres under TCA program management with the expectation that over 17,000 acres would eventually fall under the auspices of the program.

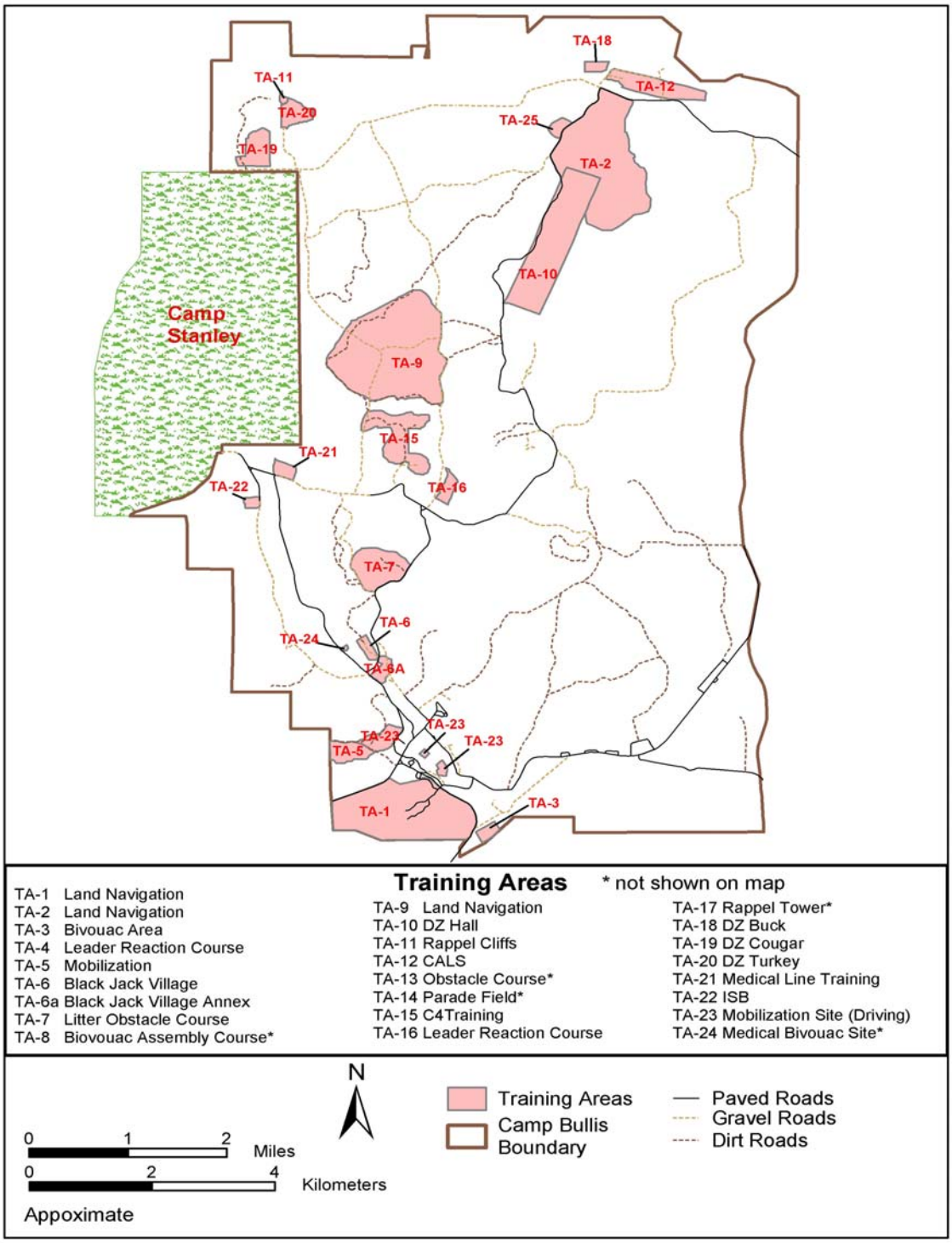
As part of keeping the ranges and training areas usable for the purposes for which they were constructed, operating and maintaining the ranges typically involves removal of vegetation from roads and trails and from training and maneuver areas. The ITAM and Environmental offices have developed detailed guidance that governs tree removal, road clearing, and other activities that have the potential to affect habitat that supports endangered species.

Natural Resource Management Practices

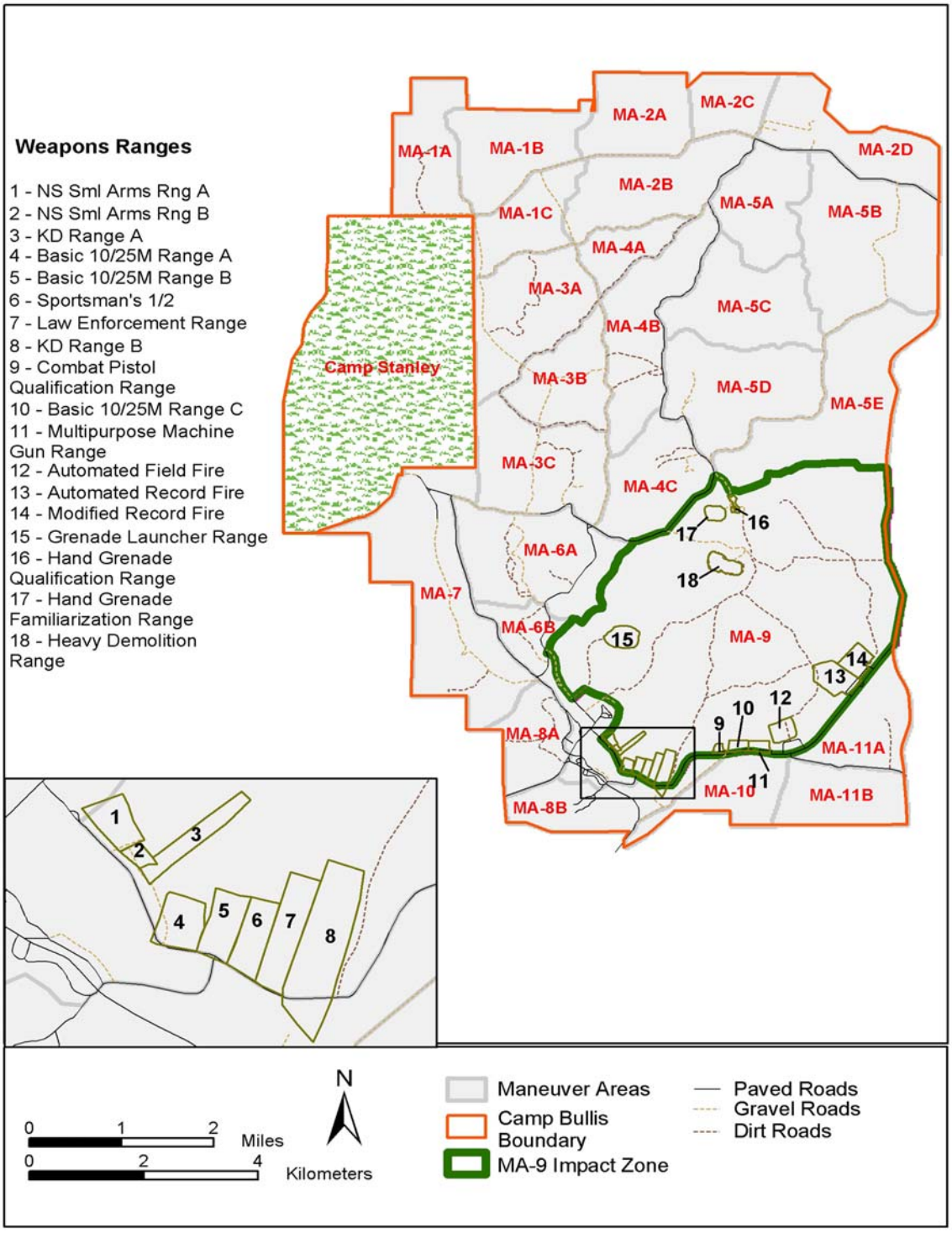
Brush Management – Brush management activities are conducted primarily under the TCA program administered by the Environmental and ITAM offices at Camp Bullis. The objective of brush management is to increase training opportunities as well as improve habitat for woodland, edge, and grassland savanna species. This objective is realized through selective removal of juniper and other brush and is limited to flat or gently sloping watershed divides and wide stream

valleys. The decision to remove brush from any given area is a well thought-out process that considers historic photographs and references, cultural and natural resource needs, and the goals of the training community on Camp Bullis.

Juniper and mixed brush areas kept on steep slopes and in canyons; these areas are a component of endangered species habitat, protect a resource from vehicular traffic, or supplement wildlife management and implementation of the TCA program. In addition, stands that complement the goals of Camp Bullis by providing buffers along the perimeter, improve the reality of training, and have potential to evolve into golden-cheeked warbler (*Dendroica chrysopaia*) habitat are also retained.



1 **Figure 2-1. Training Areas.**



1 **Figure 2-2. Ranges and Impact Areas.**

Prescribed Burning – Prescribed burning has been used as a management tool for maintaining grassland savannas at Camp Bullis since the mid-1970s. Burns since that time have totaled about 4,000 hectare (ha) (10,000 acres). Juniper is a fire-sensitive species with young plants up to about 1.5 meters (m) in height easily killed by fire under cool burn conditions. Hardwood species within grassland areas tend to be fire resistant and are seldom harmed as long as a high fuel load does not exist in close proximity. Areas that have been subjected to repeated burns have developed into a mosaic of grassland and mixed brush, including juniper, depending on terrain and soil condition. Deeper soils within burn areas tend to remain in a grassland configuration, while shallower soils that produce a lesser amount of fine fuel (grass) gradually are occupied by scattered woody species. The plant community mosaic resulting from prescribed burns provides wildlife food and cover as well as open military maneuver space and tactical concealment opportunities.

From 1989 to 1991, no prescribed burns were used due to a shortage of manpower. From 1991 to 2005, a total of 5,679 ha (14,033 acres) were actually managed with prescribed burning. No burning has been conducted in 1999, 2000, or 2002 due to drought conditions. The total area burned since 1991 is shown in Table 2-4.

Table 2-4. Prescribed Burning (1991 to 2005)

Year	Area
1991	229 ha (566 a)
1992	890 ha (2198 a)
1993	652 ha (1612 a)
1994	607 ha (1499 a)
1995	580 ha (1432 a)
1996	444 ha (1097 a)
1997	355 ha (878 a)
1998	960 ha (2373 a)
1999	0 ha
2000	0 ha
2001	654 ha (1617 a)
2002	0 ha (0 a)
2003	108 ha (266 a)
2004	176 ha (434 a)
2005	24 ha (59 a)

ha = hectare (1 hectare = 2.471 acres)
Source: Environmental Office, Camp Bullis

Education of Range Users – As part of its management program, the ITAM office at Camp Bullis performs outreach and educational activities for the users of its training facilities. Twice annually, it hosts a user conference to disseminate information and command policies and receive user feedback. Additionally, it is the proponent for the AMEDD C&S & Fort Sam Houston (FSH) Regulation 350-2, Camp Bullis Training,

which prescribes the permitted activities and procedures units must follow in order to use the Camp Bullis training facilities. As part of its educational outreach, the office produces training aids and visual graphics for users to assist in identification of wildlife and for similar purposes.

2.2.1.6 *Construction Activities*

The existing programmed construction project list for Camp Bullis is not directly tied to any increase or decrease in activity at Camp Bullis (Schlatter 2005a). The existing activity level presented for the no action alternative is the background against which Camp Bullis performs its mission and land-use master planning activities. These inputs are also used in a systematic programming of construction funding in accordance with the Army's Planning, Programming, Budgeting, and Execution System (PPBES). The construction activities programmed under the Camp Bullis PPBES are part of a broader context of activities that may include other federal and non-federal actions. The current five-year construction and demolition plans, therefore, are presented as part of cumulative effects analysis in Section 5. Planned construction activities for FY 2006 through FY 2011 are presented in Table 5-1. Projected demolition activities are shown in Table 5-2.

As the design becomes more detailed and the funding of these projects is appropriated, Records of Environmental Consideration (REC) would be prepared as required by 32 CFR §651, the Army's NEPA implementing regulation. The environmental reviews required under NEPA would be performed in conjunction with the design and prior to the execution of the construction and demolition projects. The result of such RECs may take the form of a categorical exclusion, an EA or an environmental impact statement, depending upon the nature of the project, its environmental setting, and the significance of the anticipated impacts.

2.2.2 Update Mission Activities (Alternative B – Proposed Action)

Under the proposed action, the qualitative nature of the military activities would change slightly as the emphasis on combat survivability increases. Camp Bullis is not proposing to increase the size of its existing training areas or maneuver areas, nor is it proposing to construct additional weapons ranges or impact areas. The mix of tenant units would not change and would remain as presented in Table 1-1. The Air Force and Army units from Lackland AFB and Fort Sam Houston would remain the primary tenants at Camp Bullis, using their permanent infrastructure and training areas.

2.2.2.1 *Proposed Usage*

The installation proposes to increase the intensity of existing activities. Camp Bullis is proposing to increase usage to 1 million man-days per year (Keenan 2005). The activity level would fluctuate from year to year as military activities throughout the world dictate. Depending upon force structure and budgetary decisions made by Congress and the DoD, the level of activity in a given year may rise or fall. However, the trend since the advent of the Global War on Terrorism has been for an increasing level of activity. In light of that increase over time, the Garrison Commander has proposed an increased level of activity. This EA has been prepared in order to assess the effects of this increase on the natural and human environment from such an increase.

The increased usage has been occurring gradually over time and the mix of users has varied from year to year. The nature of that mix in future years is unknown. Therefore, to assess the effects of increased usage, a notional mix of users is presented; the mix assumes the users are the same and their ratio of use remains similar. The data presented in Table 2-5 reflect this by taking the FY 2004 data and applying the proposed increase to that level of training activity at Camp Bullis. The new level was spread across the existing ratios of activity. The levels shown are illustrative, and

the monthly totals and daily averages are representative, but not limiting. The mix of activity is also illustrative; at this juncture, it is not possible to project which tenants on Camp Bullis will account for the increase given the diverse mix of military users and activities currently ongoing. No change to the permanent party, full-time civil service or military staff levels is proposed as part of the action.

2.2.2.2 *Camp Bullis Headquarters Detachment and Fort Sam Houston Garrison Directorates (Base Operations and Logistical Support Activities)*

As noted above, no qualitative changes to the nature of base operations is anticipated due to implementation of the proposed action. At present, no increased staffing, or changes to the organizational structure of the military, civilian, and contractor staff is proposed in conjunction with increasing the usage of the facilities. The Headquarters Detachment and the FSH Garrsion Command staff directorates would continue to operate similar to the way they do currently.

2.2.2.3 *Classroom, Storage, and Other Non-Tactical Facilities*

No construction projects are programmed in conjunction with the increased usage of Camp Bullis facilities.

2.2.2.4 *Operation of Small Arms Ranges, Maneuver Areas, Training Areas, and Impact Area for Supported Units*

As part of the increased use of facilities at Camp Bullis, there would be corresponding increases in the quantities of ammunition expended; petroleum products consumed in vehicles and aircraft; subsistence consumed by soldiers, sailors, and airmen, and utility consumption (electricity, water, sewerage).

2.2.2.5 *Range Management, Maintenance, and Rehabilitation*

Although no expansion, alteration, or change to existing management practices performed by the ITAM office is anticipated, it is expected that an increase in usage of Camp Bullis facilities would require a corresponding increase in maintenance and educational activities. Additional outreach to users may become necessary, and additional maintenance activities of roadways, buildings and structures, and training areas are anticipated. However, it is expected that these activities would remain within the confines of the current training area, weapons range, impact area, and maneuver area boundaries.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The discontinuance of military training activities and the closure of Camp Bullis was suggested as an alternative but is not analyzed in detail in this EA. This alternative would not fulfill the purpose and need for the action, enabling the camp to perform its ongoing mission as the premier combat medic and military medical student facility and to support increased operations under the Global War on Terrorism.

The relocation of activities within 1 hour travel time (35 miles) of Lackland AFB and Fort Sam Houston to a different site was suggested as an alternative and is similarly not analyzed in detail. Apart from the abandonment of the monies invested in building the ranges and similar facilities at Camp Bullis, creation of a new training facility that would meet the purpose and need would represent a diversion of scarce resources in a time of increased operations.

The existing local bases (Randolph AFB, Brooks City Base, Lackland AFB, and Fort Sam Houston would meet the travel time criterion; however, they do not have sufficient undeveloped land available on them to reproduce the training assets found on Camp Bullis. Elsewhere in the

San Antonio vicinity, there is similarly an insufficient inventory of large, undeveloped tracts of land that could feasibly and economically be developed into a training range complex.

Table 2-5. Total Proposed Monthly and Average Daily Use at Camp Bullis.

ACTIVITY		OCT 31 days	NOV 31 days	DEC 31 days	JAN 31 days	FEB 28 days	MAR 31 days	APR 30 days	MAY 31 days	JUN 30 days	JUL 31 days	AUG 31 days	SEP 30 days	TOTAL YTD
AD Army	Mo.Total	30,193	39,182	20,340	28,857	26,707	46,407	25,626	28,340	25,830	35,811	19,473	31,130	357,895
Average	Daily Avg.	974	1,306	656	931	954	1,497	855	915	861	1,155	628	1,038	980
AD AF	Mo.Total	29,337	24,271	28,460	26,292	21,052	21,520	31,701	29,439	22,180	35,227	22,993	19,095	311,566
Average	Daily Avg.	1,102	943	1,069	988	876	809	1,231	1,106	861	1,323	864	741	994
Other AD	Mo.Total	463	317	165	84	474	253	409	584	135	82	676	514	4157
Average	Daily Avg.	15	11	5	3	17	8	13	19	4	3	21	17	12
Reserves	Mo.Total	6732	12,490	2,245	4,029	2,241	6,082	8,780	3,417	2,957	6,752	36,400	4,756	96,879
Average	Daily Avg.	217	417	72	130	80	196	293	110	99	218	1175	158	265
Nat Guard	Mo.Total	3,915	2,151	2,685	2,649	2,680	7,463	2,036	1,990	118	18,557	3,358	750	43,353
Average	Daily Avg.	126	72	87	86	95	241	68	64	4	599	108	25	133
ROTC	Mo.Total	4,273	1,623	121	362	710	2,182	763	2,688	48,024	4,366	402	1,507	67,021
Average	Daily Avg.	138	54	4	12	25	71	25	87	1,601	141	0	51	183
AVN TNG	Mo.Total	1,438	409	1,022	662	287	1,010	287	375	53	1,101	299	224	7,166
Average	Daily Avg.	47	13	33	21	11	32	9	12	1	36	9	8	20
CIV ORG	Mo.Total	5,787	6,133	3,563	5,491	2,660	3,583	3,658	4,230	5,841	7,415	3,756	3,565	55,658
Average	Daily Avg.	186	205	115	166	84	115	122	136	184	240	121	119	153
Sub Total	Mo.Total	86,969	90,572	63,287	72,756	60,253	92,043	78,479	75,910	108,792	115,111	91,143	64,685	1,000,000
Average	Daily Avg.	2,806	3,019	2,041	2,347	2,152	2,969	2,616	2,448	3,627	3,713	2,940	2,156	2,740
YTD	Mo.Total	86,969	177,542	240,828	313,584	373,837	465,880	544,359	620,270	729,061	844	935,315	1,000,000	
Average	Daily Avg.	2,806	2,910	2,617	2,549	2,493	2,560	2,568	2,553	2,671	2,777	2,793	2,740	

AD = Active Duty
AF = Air Force
AVN TNG = Aviation Training
ROTC = Reserve Officers Training Corps
YTD = Year to Date
Source:

2.4 COMPARISON OF THE ALTERNATIVES

Table 2-6 provides a summary comparison of the alternatives as they relate to the purpose and need criteria presented in Section 2.1. This table indicates that only the proposed action would meet the established purpose and need for the proposed action.

Table 2-6. Summary Comparison of Alternatives Considered.

Purpose and Need Criteria	Alternatives		
	Proposed Action	No Action	Alternatives Eliminated from Detailed Analysis
Training facility located within 35 miles of Lackland AFB and Fort Sam Houston	Yes	Yes	No
Utilization level of Camp Bullis does not fall below 500,000 man-days per year	Yes	Yes	No
Training facility allows for surge capacity to allow for Fort Sam Houston's use as a mobilization station	Yes	No	Yes

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3.0 AFFECTED ENVIRONMENT

3.1 AIRSPACE MANAGEMENT AND USE

3.1.1 Definition of Resource

Airspace management and use describes how and in what airspace the aircraft that fly to and from Camp Bullis operate and how that airspace is managed for the benefit of all its users, civil and military. This section of the EA briefly examines the rules, regulations, and, procedures that permit aircraft operations on and around Camp Bullis to be conducted safely among all other operations that are part of the National Airspace System (NAS). Airspace management and use is interrelated to other resources and topics, including, safety, noise, air quality, and biological resources.

Airspace extends from the surface of the earth upward. The FAA has overall jurisdiction over the NAS and one of its principal management techniques is to define different kinds of airspace and to regulate aircraft operations within the NAS. Additionally, the FAA is the provider of air traffic control (ATC) services; many of the distinctions among the various airspace categories hinge upon whether or not the FAA is providing ATC separation of aircraft to all, some, or none of the users.

Procedures established for airspace use and flight operations by aircraft operating under Visual Flight Rules (VFR) or Instrument Flight Rules (IFR) help segregate aircraft operating under each set of operating procedures. Military pilots are trained for and operate under both VFR and IFR depending upon mission requirements. When operating under IFR, the FAA is responsible for aircraft separation. During VFR operations, the pilot bears responsibility for aircraft separation, principally by seeing and avoiding conflicting traffic.

The proposed no action and proposed action alternatives involve flight operations that would occur in both controlled and uncontrolled airspace types that are associated with airfields, heliports, and training areas. Neither the proposed action nor its alternative entails the use of specifically defined airspace withdrawn from public access and use (commonly known as special-use airspace); therefore, special-use airspace is not extensively described in this section.

Characteristics of Airspace

Controlled Airspace

In order for the FAA to provide ATC separation, it must define airspace geographically within which it would provide that service and prescribe common operating procedures and regulations. The term controlled airspace means airspace of a defined geographic dimension that has been adopted by a formal rule-making process, and within which the FAA exercises ATC and provides separation to certain participating aircraft. Controlled airspace is depicted on aeronautical charts, affording pilots notice of its existence and requirements. In the eastern and central United States, most airspace that is greater than 1,200 feet above ground level (AGL) is controlled airspace, and in the vicinity of busier airports, controlled airspace extends all the way to the surface. In the airspace surrounding the busiest airports in the country and at the higher altitudes (greater than 18,000 feet above mean sea level [MSL]), participation is not optional, and the FAA provides separation by requiring clearances and directing the use of particular headings, altitudes, and airspeeds. In less busy areas and at lower altitudes, separation services are only provided to aircraft operating under IFR.

The different classifications of controlled airspace (Classes A, B, C, D, and E) generally correlate with the complexity or density of aircraft movements within the airspace, the minimum

acceptable weather conditions for flight under VFR, the national and public interest in the airspace, and, the degree of regulation imposed. Among the classifications, there are varying levels of required minimum airmen certification ratings, minimum required aircraft equipment and communications requirements.

The greatest degree of control is exercised in Class A airspace (defined as airspace greater than 18,000 feet above MSL) and Class B airspace, which is found around the nation's busiest airports (e.g., Dallas-Fort Worth). Class C and Class D airspace is associated with airports having a level of flight activity sufficient to justify the staffing of an ATC tower and radar approach/departure control facility (Class C) or just an ATC tower (Class D). Class C airspace is larger in area and volume and indicates an airport with a greater number of operations than are found at airports lying within Class D airspace. The airspace over and near San Antonio International Airport is an example of Class C airspace. Randolph AFB and Stinson Airport are examples of Class D airspace.

Uncontrolled Airspace

In uncontrolled (Class G) airspace, the FAA does not provide separation services to aircraft. It has less stringent minimum weather conditions for VFR operations, and the minimum equipment and pilot training requirements are not as extensive compared to controlled airspace. Primary users of uncontrolled airspace are general aviation and military aircraft operating in accordance with VFR, although IFR flights may begin and end at airports lying within uncontrolled airspace.

3.1.2 Region of Influence

The region of influence (ROI) for airspace includes Camp Bullis and its vicinity, including the airspace used by aircraft arriving and departing from the installation. The proposed action and no action alternative both include operations in controlled (Classes C and E) and uncontrolled (Class G) airspace. As is detailed further below, the San Antonio Class C airspace extends outward on a 10-mile radius from the San Antonio International Airport. Given the relatively low number of annual aircraft operations at Camp Bullis, the ROI only includes the northwest quadrant of the San Antonio Class C airspace since that is the only portion overlying Camp Bullis.

3.1.3 Existing Conditions

3.1.3.1 *Camp Bullis*

Combat Assault Landing Strip (9TX5)

Located near the northern boundary of Camp Bullis in Maneuver Area 2, this airfield lies in Class G, uncontrolled, airspace. The Class G airspace extends upward to the floor of the overlying Class E airspace, which begins at 700 feet AGL (1,858 feet MSL). Located approximately 15 miles north of the San Antonio International Airport, the airfield consists of an unpaved (gravel) airstrip that is 3,600 feet long and 60 feet wide. Its elevation is 1,158 feet MSL. There are no aircraft based there; instead, it is a training area used by C-130 *Hercules* aircrews and military units to practice combat assault scenarios during which an aircraft lands under simulated tactical conditions and on-loads or off-loads its passengers and cargo.

Camp Bullis Heliport (9R7)

The heliport at Camp Bullis consists of a 500-foot by 200-foot concrete pad located in the cantonment area of the installation. Its field elevation is 1,066 feet MSL and it primarily is used by medical evacuation and Very Important Person (VIP) flights. The heliport lies in Class G airspace which extends from the surface to 699 feet AGL (1,765 feet MSL). From 1,765 feet MSL to 2,199 feet MSL, the airspace is Class E, and above that is a shelf (2,200 feet to 4,800 feet

MSL) of the San Antonio Class C airspace. Published procedures for aircraft arriving at San Antonio International airport from the northwest call for aircraft to transit the airspace over the southwest corner of Camp Bullis at 3,000 feet MSL when landing to the south. The cantonment area of Camp Bullis is approximately 6 miles northwest of the threshold of Runway 12R at San Antonio International Airport. The Class C airspace exists to confine those arrival/departure operations to provide separation services. Other aircraft wishing to enter the airspace must establish communications with approach controllers and have certain automated position reporting equipment (i.e., a transponder) installed.

Medical Combat Lanes

The AMEDD C&S operates training sites that involve periodic use of rotary-wing aircraft, such as a litter obstacle course. This site, located in Maneuver Area 6B, is used by medical students learning how to evacuate casualties under simulated combat conditions. The site is used during daylight hours and helicopters are used as part of the scenario. This activity has been previously assessed at a level of one helicopter operating for two hours daily, every other week. (Army 1995b, 1999). The airspace in this vicinity is similar to that of the Camp Bullis heliport, with a Class G surface area, Class E airspace above that, and the San Antonio Class C shelf above that.

3.1.3.2 *Regional Setting*

The airspace of the San Antonio region reflects the concentrated military presence that characterizes the region. In addition to the San Antonio International Airport, two Air Force bases with extensive operations are nearby, Lackland AFB (Kelly Field Annex) and Randolph AFB. Each of these has Class D airspace for sequencing takeoff and landings that underlie the San Antonio Class C airspace shelf. Arrival/departure control services are provided by the San Antonio Terminal Radar Approach Control facility. The training routes used by aircraft stationed at these bases are approximately 15 miles northwest of Camp Bullis, and the special-use airspace within which they maneuver (Randolph 2B Military Operations Area) is approximately 7 miles southwest of the cantonment area. The operating altitudes of Randolph 2B begin at 9,000 feet MSL and extend upward to 21,000 feet MSL.

3.2 BIOLOGICAL RESOURCES

3.2.1 Definition of Resource

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. These resources are divided into three major categories: (1) vegetation, (2) wildlife including mammals and bird species, and (3) threatened, endangered, or sensitive species. Biological resources at Camp Bullis are managed through an Integrated Natural Resources Management Plan (INRMP) (Army 2005c).

3.2.2 Region of Influence

The ROI includes habitat for wildlife and threatened and endangered (T&E) species found on or near Camp Bullis.

3.2.3 Affected Environment

Vegetation

Camp Bullis is located on the southern edge of the Edwards Plateau near the junction of three vegetation zones: the Blackland Prairie, South Texas Plains, and Edwards Plateau. The

combination of these zones produces a diversity of plant communities including open grasslands and prairies intermixed with oak/juniper savannas and oak/juniper/mesquite thickets.

Historical reports and experimental data suggest that, prior to settlement by humans, fire helped maintain many areas as open grasslands or savannas. Since settlement, fire has been suppressed in these areas and today they are wooded. Some areas, especially on the southeastern Edwards Plateau, are not conducive to repeated fires because of the highly variable topography and discontinuity of vegetation to serve as fuel.

Currently, the dominant woody vegetation at Camp Bullis consists of ashe juniper (*Juniperus ashei*), live oak (*Querqus virginiana*), and other oak species (Army 2005c). Approximately 59 percent (16,491 acres) of Camp Bullis is covered with dense stands of ashe juniper with a sparse ground cover. Approximately 32 percent of Camp Bullis is oak/grassland savannas and 7 percent is open grassland with scattered patches of trees. The remainder of installation acreage consists of developed areas, roads, buildings, and training facilities (Army 2005c).

Wildlife

Camp Bullis supports a variety of wildlife. Small mammals present at the base include the fox squirrel (*Sciurus niger*), black-tailed jackrabbit (*Lepus californicus*), eastern cottontail (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), and armadillo (*Dasypus novemcinctus*). Rodents are common and provide a food supply for carnivores such as the ringtail cat (*Bassariscus astutus*), striped skunk (*Mephitis mephitis*), eastern and western spotted skunks (*Spilogale putorius* and *S. gracilis*, respectively), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*). Occasionally, larger predators such as the mountain lion (*Felis concolor*) and ocelot (*Felis pardalis*) inhabit the Edwards Plateau region (Army 2005c).

Oberholser (1974) listed 358 species of birds known or presumed to exist in or around Camp Bullis. An unofficial list of bird sightings on Camp Bullis includes approximately 203 species. Songbirds, raptors, and shorebirds as well as waterfowl and upland gamebirds can be found at Camp Bullis.

Threatened, Endangered, and Sensitive Species

The Endangered Species Act (16 USC §1531-1543) requires federal agencies to determine the effects of their actions on endangered or threatened species of fish, wildlife, plants, and critical habitats and to take steps to conserve and protect these species. Army Regulation (AR) 200-3 prescribes the Army's policies, procedures, and responsibilities for managing natural resources, in support of the military mission and consistent with sound principles of resource stewardship.

Over 50 sensitive plant and animal species have been identified that occur or have the potential to occur on Camp Bullis, including some that are listed as threatened or endangered by the USFWS and the Texas Parks and Wildlife Department (TPWD) (Table 3-1). Those that are not listed as threatened or endangered are included here because they are sensitive due to unique habitat requirements or population vulnerability. The 57 species listed include 8 plants, 15 invertebrates, 5 fish, 11 reptiles and amphibians, and 18 birds.

Table 3-1. Sensitive Species Known to Occur, or with the Potential to Occur, on or near Camp Bullis.

Species		Status		Occurrence		
Common Name	**Scientific Name**	**Fed**	**State**	**K**	**P**	**U**
Plants						
Bracted twistflower	*Streptanthus bracteatus*	SoC		X		
Canyon mock orange	*Philadelphus ernestii*	SoC	S2		X	
Texas mock orange	*Philadelphus texensis*		S2		X	
Comal snakeweed	*Colubrina stricta*	SoC			X	
Hill country wild mercury	*Argythamnia aphoroides*	SoC			X	
Big red sage	*Salvia penstemonoides*	SoC	S1		X	
Correll's false dragon-head	*Physotegia correllii*	SoC			X	
Texas wild rice [1]	*Zizania texana*	E	E			X
Invertebrates						
Madla's cave spider	*Cicurina madla*	E		X		
Robber baron cave spider	*Cicurina baronia*	E			X	
Veni's cave spider	*Cicurina venii*	E			X	
Vesper cave spider	*Cicurina vespera*	E			X	
Government Canyon spider	*Neoleptoneta microps*	E			X	
Ground beetle	*Rhadine exilis*	E		X		
Ground beetle	*Rhadine infernalis ewersi*	E		X		
Helotes mold beetle	*Batrisodes venyivi*	E			X	
Comal Springs riffle beetle [1]	*Heterelmis comalensis*	E			X	
Comal Springs dryopid beetle [1]	*Stygoparnus comalensis*	E			X	
Peck's cave amphipod [1]	*Stygobromus pecki*	E			X	
Texas cave diving beetle	*Haideoporus texanus*	SoC			X	
Maculated manfreda skipper	*Stallingsia maculosus*	SoC			X	
Mimic cave snail	*Phreatodrobia imitata*	SoC			X	
Horseshoe liptooth	*Polygyra hippocrepis*	SoC			X	
Fish						
Toothless blindcat	*Trogloglanis pattersoni*	SoC	T			X
Widemouth blindcat	*Satan eurystomus*	SoC	T			X
Fountain darter [1]	*Etheostoma fonticola*	E	E			X
Guadalupe bass	*Micropterus treculi*	SoC				X
San Marcos gambusia [1, 2]	*Gambusia georgei*	E	E			X
Reptiles and amphibians						
Texas garter snake	*Thamnophis sirtalis annectens*	SoC			X	
Timber (canebreak) rattlesnake	*Crotalus horridus atricaudatus*		T		X	
Texas indigo snake	*Drymarchon corais erebennus*		T		X	
Texas horned lizard	*Phrynosoma cornutum*	SoC	T		X	
Cagle's map turtle	*Graptemys caglei*	C				X
Texas tortoise	*Gopherus berlandieri*		T			X
Comal blind salamander	*Eurycea tridentifera*	SoC	T	X		
Texas salamander	*Eurycea neotenes*	SoC			X	
Cascade Caverns salamander	*Eurycea lititans*		T		X	
San Marcos salamander [1]	*Eurycea nana*	T	T			X
Texas blind salamander [1]	*Typhlomolge rathbuni*	E	E			X

Table 3-1. Sensitive Species Known to Occur, or with the Potential to Occur, on or near Camp Bullis (cont'd).

Species		Status		Occurrence		
Common Name	**Scientific Name**	**Fed**	**State**	**K**	**P**	**U**
Birds						
Eastern brown pelican	*Pelecanus occidentalis*	E	E			X
Reddish egret	*Egretta rufescens*	SoC	T			X
White-faced ibis	*Pelgadis chihi*	SoC	T			X
Wood stork	*Mycteria americana*	E	T			X
Bald eagle	*Haliaeetus leucocephalus*	T-PD	T		X	
White-tailed hawk	*Buteo albicaudatus*		T		X	
Zone-tailed hawk	*Buteo albonotatus*		T		X	
Ferruginous hawk	*Buteo regalis*	SoC			X	
American peregrine falcon	*Falco peregrinus anatum*	DM	E	X		
Arctic peregrine falcon	*Falco peregrinus tundrius*	DM	TSA		X	
Whooping crane	*Grus americana*	E	E		X	
Piping plover	*Charadrius melodus*	T	T			X
Mountain plover	*Charadrius montanus*	PT			X	
Interior least tern	*Sterna antillarum athalassos*	E	E			X
Loggerhead shrike	*Lanius ludovicianus*	SoC		X		
Black-capped vireo	*Vireo atricapillus*	E	E	X		
Golden-cheeked warbler	*Dendroica chrysoparia*	E	E	X		
Mexican hooded oriole	*Icterus cucullatus cucullatus*	SoC				X

[1]Edwards Aquifer-dependent species
[2]may be extinct

E= endangered
K = known to occur
T = threatened
TSA = threatened by similarity of appearance
C = candidate species
SoC = federal species of concern
PT = proposed threatened
T-PD = threatened, proposed delisted
DM = delisted with monitoring
S1 = 6-20 known occurrences in Texas
S2 = critically imperiled in Texas
P = potential to occur
U = unlikely to occur

Threatened and Endangered Plants

A draft report from an installation-wide plant inventory encompassing a full growing season was completed for Camp Bullis (Johnson et al. 1996). The inventory collected 475 species; no listed threatened or endangered species were collected during this inventory. However, one species, Heller marbleseed (*Onosmodium helleri*), is on the Texas Organization for Endangered Species (TOES) watch list for potential listing (TOES 1993). In addition, according to a list provided by the USFWS, no federal-listed threatened or endangered plant species occur at Camp Bullis. However, populations of the bracted twistflower (*Streptanthus bracteatus*), a federal- and state-listed Species of Concern (SoC), have been reported on Camp Bullis by the Camp Bullis Range Conservationist (Bruns 1996a).

Threatened And Endangered Invertebrates And Mollusks

Eight species of arthropods, including six species of beetles and two species of snails, are known to dwell in caves in the vicinity of Camp Bullis. The USFWS lists these species as SoC (USFWS 1996). All of these invertebrates are troglodytes, which are species that have adapted to subterranean habitat and spend their entire lives underground. Most of these karst invertebrates are believed to be predators that feed on even smaller insects (microarthropods) or well decomposed organic matter (Campbell 1995).

To date, 95 caves, 23 caves with endangered species, one with *Cicurina madla*, and 929 karst features have been documented on the installation. Fifteen were found to contain two species of beetles petitioned for federal listing as endangered species (*Rhadine exilis* and *R. infernalis ewersi*). All the federally listed cave-dwelling species identified by the USFWS are threatened by urban expansion of San Antonio and communities surrounding Camp Bullis onto karst features and from the recharge areas associated with the Glen Rose and Edwards aquifers (Veni 1996a; 1996b).

Threatened and Endangered Fish, Reptiles, Amphibians, and Mammals

There are no known populations of federal- or state-listed threatened or endangered fish, reptiles, amphibians, or mammals on Camp Bullis.

Threatened and Endangered Birds

Three bird species are listed on the federal and state endangered species lists as occurring on Camp Bullis: black-capped vireo (*Vireo atricapillus*), golden-cheeked warbler, and the whooping crane (*Grus americana*). The black-capped vireo and golden-cheeked warbler are neotropical migrants that arrive at Camp Bullis during March and April to begin nesting.

Management for the golden-cheeked warbler and black-capped vireo includes habitat protection, yearly population monitoring, and territory monitoring. The TCA program and prescribed fire enhance habitat by providing for plant species diversity. The TCA program facilitates golden-cheeked warbler habitat protection by drawing training and other activities away from the mature cedar.

Specific management for black-capped vireo habitat involves the creation of early successional habitat by using fire, chaining (a method of dragging a large gauge chain through vegetation), and military vehicle maneuvers (the disturbance creates the reversion to early successional plant communities).

The whooping crane migrates through Camp Bullis in mid-fall and again in mid-spring during normal migratory patterns, and is sporadically seen on Camp Bullis (Bruns 1999).

As for other sensitive species, the American peregrine falcon (*Falco peregrinus antum*) has been de-listed as endangered federally, but is still listed as state endangered (TPWD 2000). It is seen occasionally on Camp Bullis during migration. The TPWD also lists the Arctic peregrine falcon (*Falco peregrinus tundrius*) as state threatened because it resembles the endangered American peregrine falcon.

Another sensitive bird species, the loggerhead shrike, is a federal SoC that breeds throughout much of Texas including the Camp Bullis area. SoC is a designation given by the USFWS to a species for which there is some evidence of vulnerability, but not enough data exist to support listing by the state or federal government as threatened or endangered. Breeding bird data from 1966 through 1996 show a steady decline in loggerhead shrike populations nationwide. Loggerhead shrike populations north of Texas migrate south to New Mexico, Texas, and Arizona to winter (Root 1988), indicating that the shrike population in the Camp Bullis area likely consists of wintering and resident birds. The loggerhead shrike was observed during surveys for golden-cheeked warbler and black-capped vireo and listed as a possible breeding species (Stewardship Services 1995). However, these surveys generally were not done in the grassland and grassland savanna habitat preferred by this species, indicating that the distribution and abundance of the loggerhead shrike on Camp Bullis is largely unknown.

3.3 CULTURAL RESOURCES

3.3.1 Definition of Resources

Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources have been divided for ease of discussion into three main categories—prehistoric and historic archeological resources, historic buildings and structures, and traditional resources. In this EA, the term "historic properties" refers to cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP).

Federal regulatory requirements for the protection of cultural resources are chiefly guided by the National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq., as amended), the Archeological and Historic Preservation Act (AHPA) of 1974 (16 USC 469a et seq.), and the Archeological Resources Protection Act (ARPA) of 1979 (16 USC 470aa-470ll). All of these laws are designed to ensure adequate consideration of the values of historic properties in carrying out federal activities and to attempt to identify and mitigate impacts to significant historic properties. The NHPA is the principal authority used to protect historic properties; federal agencies must determine the effect of their actions on cultural resources and take certain steps to ensure that these resources are located, identified, evaluated, and protected.

Regulation 36 CFR §800 defines the responsibilities of the state, the federal government, and the Advisory Council on Historic Preservation (ACHP) in protecting historic properties identified in a project area. The 36 CFR §60 establishes the NRHP and defines the criteria for evaluating eligibility of cultural resources for listing on the NRHP. The ARPA protects archeological resources on federal lands. Unauthorized excavation, removal, damage, alteration, or defacement of archeological resources on public lands is prohibited.

Legal mandates pertaining to Native American cultural resources and religious freedom include the NHPA, Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001 et seq., 43 CFR §10), NEPA, ARPA, American Indian Religious Freedom Act (AIRFA) of 1978, as amended (42 USC 1996-1996a), and Executive Order (EO) 13007. Army regulations and guidelines (AR 200-4, Department of the Army Pamphlet (DA PAM) 200-4, and the Annotated Policy Document for the American Indian and Alaska Native Policy [27 October 1999]) recommend the following steps be taken to facilitate consultation:

- establishment of an ongoing consultation relationship with Native Americans;
- designation of a Coordinator for Native American Affairs; and
- incorporation of consultation procedures into existing Army planning and procedural documents.

3.3.2 Region of Influence

For this analysis, the ROI under NEPA is synonymous with the area of potential effect (APE), as defined by regulations implementing the NHPA. The ROI for the analysis of cultural resources at Camp Bullis includes all areas where there will be an increase in the tempo of training activities, i.e., the entire facility.

3.3.2.1 *Prehistoric and Historic Archeological Resources*

For the purposes of providing a context for the cultural resources analyzed within this EA, very brief discussions of the prehistory and history at Camp Bullis are presented. Additional detailed

information can be found in a number of previously prepared reports, including the *Integrated Cultural Resources Management Plan: Camp Bullis Training Site* (Peter et al. 2001).

Camp Bullis is located within the Central Texas archeological region. Four major cultural periods are recognized within this region—the Paleo-Indian Period (10,000-6000 B.C.); the Archaic Period (6000 B.C.–A.D. 800); the Late Prehistoric Period (A.D. 800–1700); and the Historic Period (post A.D. 1525), with several phases or complexes defined within each. From the information derived from archeological investigations conducted in the region, it appears that the first inhabitants in Central Texas arrived over 11,000 years ago during the Paleo-Indian period. Evidence of Paleo-Indian activity in central Texas, however, is infrequent. Archeological studies conducted at Camp Bullis suggest that it was first occupied during the latter part of this period.

Numerous Archaic period sites, primarily lithic scatters, lithic procurement sites, and campsites, are found at Camp Bullis. In Central Texas, the Archaic period is defined by increasing sedentism and population growth, with associated social differentiation with several distinct cultural groups evolving.

The Late Prehistoric period, which is also represented in Camp Bullis' archeological record, is marked by economic adaptations arising from the adoption of the bow and arrow as the weapon of choice among Central Texas groups. The greater efficiency of the bow and arrow may have led to changes in the relative importance of hunting as opposed to gathering, but there is little evidence indicating the adoption of agriculture. Trade with the Caddoan groups of East Texas is indicated by the ceramics found at some Late Prehistoric sites (a single sherd of Caddoan pottery has been found at Camp Bullis). Late Prehistoric sites at Camp Bullis are primarily lithic procurement sites, campsites, and lithic scatters.

Native American use of the Camp Bullis area appears to have continued through at least the early part of the Contact Period (A.D. 1525-1820), a period that is marked first by Spanish expeditions into the region in 1691 and later the establishment of missions.

During the early part of the Historic Period (post 1820), the Mexican government sanctioned settlement in the interior portions of Texas allowing Anglo-Americans and Euro-Americans to legally inhabit the Central Texas region. Despite immigration, the population of San Antonio and the surrounding area remained relatively low until the 1840s, when a large number of German immigrants moved into the region. In the 1850s, cattle ranchers started large-scale ranches in Central and South Texas, dominating the economy for decades to come. After the Civil War, the arrival of the railroad to San Antonio spurred a post-war boom and accelerated immigration into the region. It was at this point, during the mid-to-late 1880s, that Camp Bullis became the site of at least a dozen small farms and ranches. Structural and archeological evidence of these farms still exist on post, including the home of Otto Schell (Building 6201), a German immigrant who moved to the property as early as 1888.

Military use of Camp Bullis began in 1906, when the impracticalities of heavy weaponry training at the nearby Army post of Fort Sam Houston prompted the creation of an adjunct reservation. Since that time, the property has been used for military training purposes and contains archeological resources associated with that history. Military-related archeological sites at Camp Bullis include World War I-and World War II-era site training features (i.e., bunkers and encampments), cisterns, and trash pits.

To date, most of undisturbed parcels on Camp Bullis have been surveyed for archeological resources and over 329 archeological sites have been recorded, the vast majority of which (280+) are not eligible for listing in the NRHP. The cantonment area is likely heavily disturbed from previous construction and operational use and the potential for intact archeological resources to be identified is limited.

3.3.2.2 *Historic Buildings and Structures*

Camp Bullis contains a significant number of historic properties, both buildings and structures, that are important to military and local history. According to the Camp Bullis ICRMP (2001), the number of buildings and structures in the facility's database was 364. Of these, 89 buildings and structures and 37 landscape features were built before 1955. The remaining buildings and structures were built significantly after that date, causing them to fall well outside the 50-year mark typically used by the NRHP as the base criterion for eligibility. Of the pre-1955 buildings and structures, 81 were considered eligible for inclusion on the NRHP. In addition, 32 landscape features were identified as eligible for inclusion on the NRHP. The majority of the facility's architectural resources are contained within the cantonment area, which has been recommended as a potential NRHP District (Freeman 1993, Army 1998).

Planned in 1929–1930 and completed between 1930 and 1945, the cantonment is composed of residential, administrative, maintenance and repair, recreation and entertainment, service/support, and warehouse buildings and structures. Its contributing components are exemplary of a War Department philosophy formulated during the late 1920s that employed the tenets of city planning rather than the austere and rigid approach taken by military designers of the past. The cantonment is also historically associated with the Civilian Conservation Corps (CCC) and Works Progress Administration (WPA) work programs that, through construction projects at Camp Bullis and other military and public facilities across the country, provided unemployment relief to many Americans during the economic depression of the 1930s. Additionally, the cantonment is significant for its association with military training programs during the late 1930s through World War II, in particular the Triangular Division concept tested in 1937 and 1939 by the Second Infantry Division at Camp Bullis.

3.3.2.3 *Traditional Resources*

Traditional resources can include archeological sites, burial sites, ceremonial areas, caves, mountains, water sources, plant habitat or gathering areas, or any other natural area important to a culture for religious or heritage reasons. Significant traditional resources sites (called Traditional Cultural Properties [TCPs]) are subject to the same regulations and are afforded the same protection as other types of historic properties.

To date, no Native American or non-Native American TCPs have been identified within the boundary of Camp Bullis. However, to ensure that any concerns relating to the construction aspects analyzed within this EA are adequately considered, consultation with local Native American groups would be initiated. Currently identified cultural groups include the Tonkawa, the Lipan Apache, the Mescalero Apache, the Coahuiltecan, the Wichita, the Comanche, the Kiowa/Kiowa Apache, and the Caddo Indian tribes.

3.4 WATER RESOURCES

3.4.1 Definition of Resource

Water resources at Camp Bullis include surface water, groundwater, floodplains and wetlands. Surface water resources include lakes, ponds, rivers, and streams. Groundwater includes subsurface water resources such as aquifers that are used for domestic, agricultural, and industrial purposes. Low-lying areas that are prone to flooding are defined as floodplains. A 100-year flood is a flood that has a one percent chance of being equaled or exceeded in any given year (Federal Emergency Management Agency [FEMA] 2005). Resources within the 100-year floodplain are considered susceptible to flooding. Wetlands are defined by the USEPA and the USACE as those areas that are inundated or saturated by surface or groundwater at a frequency and duration

sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR §3283 [b]).

The 1987 U.S. Army Corp of Engineers (USACE) Wetland Delineation Manual specifies three criteria for the identification of wetlands: hydrophytic vegetation, hydric soil, and positive indicators of wetland hydrology.

3.4.2 Region of Influence

The ROI for water resources includes the area encompassed by Camp Bullis and, on a larger scale, the Edwards and Glen Rose aquifers.

3.4.3 Affected Environment

3.4.3.1 *Surface Water*

Six small creeks drain Camp Bullis. The creeks are intermittent in nature, fed primarily by precipitation from storms, and exist as dry streambeds the remainder of the year. Stormwater runoff at Camp Bullis flows overland as sheet wash, is collected by these natural channels and streams, and eventually drains into the San Antonio River. In addition, springs along Panther Springs Creek and Lewis Creek periodically produce surface flow for several hundred feet before disappearing into fractures, caves, and sinkholes located in the streambeds (Army 2005a).

Salado Creek, the primary surface water drainage on Camp Bullis, is located near the west edge of the installation and drains southeast. Runoff from the project area flows southward into an unnamed drainage that heads northeast to Salado Creek (U.S. Geologic Survey [USGS] 1992). Another primary surface water drainage on Camp Bullis is Cibolo Creek.

Camp Bullis has three large flood control structures. These structures are not designed to permanently impound large quantities of water; however, they do allow stormwater runoff to flow downstream at a controlled rate.

There are also several human-made stock ponds and wildlife guzzlers (small water-gathering structures for wildlife) scattered throughout the camp, as well as wastewater holding ponds in the cantonment area (Army 2005c). Two semi-permanent ponds are located on Camp Bullis: Pond 22, on Lewis Creek, and Sewell Pond, on an unnamed drainage into Panther Springs Creek (USGS 1992).

Camp Bullis protects the water quality in its watershed through compliance with a number of federal, state, local, and DoD environmental regulations that require the installation to have detailed spill control and response procedures and to implement stormwater pollution prevention best management practices (BMP). Camp Bullis maintains specific stormwater protection measures including a Stormwater Pollution Prevention Plan (SWPPP); a Spill Prevention, Control, and Countermeasures Plan; and a Hazardous Materials Management Plan. Compliance with these plans reduces the potential for adverse effects on water quality.

3.4.3.2 *Groundwater*

Groundwater beneath Camp Bullis exists in stratigraphic layers that contain enough space for water to move freely. The limestone formations beneath the camp exhibit faults, fractures, and areas of dissolution that contribute to its ability to contain groundwater. Shale, marl, and clay produce confining layers that inhibit groundwater movement; however, if faulting or fracturing displaces these layers, that can provide pathways for groundwater to move (Texas Department of Water Resource [TDWR] 1983).

The oldest formations containing groundwater under Camp Bullis are the Travis Peak Formation and Glen Rose Formation. Collectively, these formations make up the Trinity Group, which has been divided into three water-bearing units based on hydraulic continuity. The upper member of the Glen Rose Formation (also known as the Glen Rose Aquifer) makes up the upper member of the Trinity Group Aquifer. The lower member of the Glen Rose Formation is part of the middle member of the Trinity Group Aquifer. The rest of the middle and the lower members of the Trinity Group Aquifer represent the Travis Peak Formation (TDWR 1983). The Edwards Aquifer contains rock younger than the Trinity Group and is restricted to the southeast corner and northern edge of the installation.

Groundwater movement in the Trinity and Edwards aquifers is extremely variable due to the physical characteristics of the rock. Limestone and calcareously cemented sandstone depend on secondary porosity in the form of solution channels, fractures, and faults to transmit groundwater. Water production in these rock types can be erratic, resulting in unpredictable yields at different well locations.

The Edwards Limestone and Glen Rose Formation both outcrop in Camp Bullis. As a result, portions of Camp Bullis recharge both aquifers. The Glen Rose Formation derives its recharge from direct precipitation on the outcrop and streams flowing across the outcrop. The northern portion and southeast corner of the installation provide recharge to the Edwards Aquifer. Stream flow in Salado Creek crosses the Edwards Limestone in the south-central portion of Camp Bullis, providing recharge to the Edwards Aquifer. Cibolo Creek at the north end of the facility also recharges the Edwards Aquifer. Camp Bullis obtains its water supply from wells installed in the Upper Trinity (Glen Rose) Aquifer (Army 2005c; TDWR 1983).

3.4.3.3 *Floodplains*

The cantonment area is located adjacent to the Salado Creek floodplain. The drainage for Salado Creek above the cantonment area is approximately 12,350 acres. To minimize severity of downstream flooding, three water retention dams were installed on Camp Bullis. These flood control structures and other natural drainages provide adequate storage and stormwater desynchronization to almost eliminate flooding at the installation (Army 2005c). Flooding is seldom a problem on Camp Bullis; however, low water crossings are occasionally inundated during storm events.

3.4.3.4 *Wetlands*

Wetlands provide habitat for a variety of fish and wildlife. In addition, wetlands serve a variety of important ecological functions including improving water quality, flood and stormwater desynchronization, groundwater exchange, support of down-gradient base flows, and shoreline stabilization.

According to the USFWS, there are approximately 112 wetland systems that include 88.7 acres of wetlands and 41.7 acres of deepwater habitat on the installation (USFWS 1999). Using the USFWS classification system, the two types of wetland systems on Camp Bullis are palustrine and lacustrine (Cowardin et al. 1979). Most of the palustrine systems are excavated or diked impoundments that are inundated briefly following large storms. Lacustrine systems are also intermittently flooded and only contain water following large storms (USGS 1992).

3.5 EARTH RESOURCES

3.5.1 Definition of Resource

Earth resources at Camp Bullis include geology (including caves and karst features), topography, and soils. Geology includes the bedrock materials, mineral deposits, and fossil remains. Caves

and other karst features are formed from the dissolution of limestone bedrock. Caves are hollow or natural passages under the earth. Karst features are defined as an aggregate of characteristic landforms (sinkholes and fissures) and subsurface features (caves and underground streams) produced by water solution and removal of rock and sediment, usually along limestone fractures. Topography describes the elevation and slope of the terrain, as well as other visible features. The soils are divided into soil associations.

3.5.2 Region of Influence

The ROI for earth resources is the area within the physical boundaries of Camp Bullis.

3.5.3 Affected Environment

3.5.3.1 *Geology*

Camp Bullis lies on the edge of the Edwards Plateau in a hilly region called the Texas Hill Country. A broad area of faulted limestone known as the Balcones Escarpment forms the southern and eastern edge of the Edwards Plateau and crosses the southeastern corner of Camp Bullis.

Camp Bullis is underlain primarily by formations of the Trinity Group including the lower and upper members of the Glen Rose Limestone TDWR 1983). The Upper Glen Rose, which consists of beds of moderately resistant and massive chalky limestone alternating with beds of less resistant, marly (loose and crumbly) limestone, covers approximately 74 percent of Camp Bullis. The Lower Glen Rose covers 14 percent at the northern edge of the training site. Overlying a small portion of the Glen Rose at the southern edge of Camp Bullis is the Kainer Formation of the Edwards Group (Veni 1998).

3.5.3.2 *Caves and Karst Features*

The Camp Bullis landform is a typical representative of karst geology. Karst geology is defined as an aggregate of characteristic landforms (lapis, sinkholes) and subsurface features (caves) produced primarily by the dissolution of soluble rocks (Soil Science Society of America [SSSA] 2005). Subsurface karst features (caves) commonly occur in the Edwards Group. On Camp Bullis, caves have been located throughout the installation but are predominately found in the Lower Glen Rose Formation and Kainer Formation of the Edwards Group. As of 1998, 929 karsts which includes 95 caves, 23 caves with endangered species, one with *Cicurina madla*, and 295 other karst features had been identified on Camp Bullis (Veni 1998).

Five types of non-cavernous karst features are present on Camp Bullis with sinkholes being the dominant type. Collapsed sinkholes occur when surface bedrock and soil drop into the underlying void. Solution sinkholes (formed by flowing water), the dominant karst feature found on Camp Bullis, account for approximately half of those identified. Many of these are small, less than 7 feet in diameter and less than 1 foot deep. Most of these solution sinkholes are short, shallow drainage features leading to highly permeable fractures, cavities, or pits. Highly permeable fractured limestone allows sufficient drainage into the ground, minimizing overland flow that would promote development of sinkholes (Veni 1994).

The greatest number of solution-enlarged fractures occurs in the southern portion of Camp Bullis. Most of these features are buried under soil and rubble and are not visible at the surface. Some of the other features are exposed but may be only a few millimeters wide. To reveal the full extent of features or to gain access to them, soil, rubble, and debris must be excavated.

3.5.3.3 *Topography*

The topography of Camp Bullis consists of numerous hills and valleys that are drained by intermittent streams that flow east and south. Erosional differences between the stratigraphic units of the Upper Glen Rose layers have resulted in the formation of a terrace type of topography. King Ridge (elevation 1,515 feet), Otis Ridge (elevation 1,480 feet), and High Hill (elevation 1,490 feet) are the most prominent landforms on Camp Bullis. Salado Creek and Lewis Creek are the major drainages that direct surface water runoff from Camp Bullis (USGS 1992).

3.5.3.4 *Soils*

The predominant soils on Camp Bullis are of the Tarrant and Bracket series. These thin clay soils formed in weathered limestone bedrock. The Tarrant series occurs on gently undulating, 1 to 5 percent slopes, and consists of stony soils of limestone prairies. The Bracket series is on steeper slopes (12 to 30 percent) and are predominantly clay and loam. Both of these soils are well drained, but both have high erosion potential (Natural Resource Conservation Service [NRCS] 1991).

Other soil series on Camp Bullis include Krum, Lewisville, Crawford, Patrick, Venus and Bexar. Two soil complexes occur on Camp Bullis—the Crawford and Bexar and the Trinity and Frio—where each individual soil series is so intermixed with the other that mapping at the scale used precludes separating into discrete units. The Trinity and Frio soils are clay and clay loam and occur in the floodplains of small and large drainages. They are flooded at least once per year and, on Camp Bullis, are found in the Salado Creek drainage. Trinity is the only hydric soil found on Camp Bullis (NRCS 1995).

3.6 AIR QUALITY

3.6.1 Definition of Resource

Air quality at a given location is a function of several factors, including quantity and dispersion rates of pollutants, temperature, presence or absence of inversions, and topographic and geographic features. The Clean Air Act (CAA) (42 USC §7401-7671q), as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA gives the EPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR §50) that set safe concentration levels for six criteria pollutants: particulate matter measuring less than 10 microns in diameter (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O_3), and lead (Pb). Primary NAAQS are established to protect public health, and secondary standards provide protection for the public welfare, which includes wildlife, climate, transportation, and economic values (Table 3-2) Additionally, the USEPA must also ensure that air quality standards are met to control pollutant emissions from mobile (e.g., vehicles) and stationary (e.g., factories) sources.

The NAAQS represent the maximum levels of background pollutants that are considered safe, with an adequate margin of safety to protect the public health and welfare. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects. Each state is responsible for compliance with the NAAQS and has the authority to adopt standards stricter than those established under the federal program; however, the Texas Council on Environmental Quality (TCEQ) accepts the federal standards for the San Antonio metropolitan area.

Areas that violate NAAQS are designated as nonattainment areas; those areas that comply with air quality standards are designated attainment areas for the relevant pollutants.

Attainment/maintenance areas are areas that have previously been designated nonattainment and have subsequently been redesignated to attainment for a probationary period, due to compliance with the NAAQS. Attainment/maintenance status is achieved through the development and implementation of maintenance plans for criteria pollutants of interest and a reduction of actual pollutants.

Table 3-2. National Ambient Air Quality Standards.

Air Pollutant	Averaging Time	NAAQS	
		Primary	Secondary
CO	1-hour 8-hour	35 ppm 9 ppm	35 ppm 9 ppm
NO_x	Annual	0.053 ppm	0.053 ppm
SO_2	3-hour 24-hour Annual	- 0.14 ppm 0.03 ppm	0.50 ppm - -
PM_{10}	24-hour Annual	150 µg/m^3 50 µg/m^3	150 µg/m^3 50 µg/m^3
O_3	1-hour* 8-hour	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm
Pb	Quarterly Average	1.5 µg/m^3	1.5 µg/m^3

* The ozone 1-hour standard applies only to designated nonattainment areas.
ppm = parts per million
µg/m^2 = micrograms per cubic meter
Source: USEPA 2005

3.6.2 Affected Environment

The San Antonio metropolitan area (Air Quality Control Region [AQCR] 217), including Bexar and Comal counties, is considered by the TCEQ to be in near nonattainment status for O_3 (TCEQ 2004). The area is in attainment for all other criteria pollutants.

Title I of the CAA Amendments of 1990 requires that air pollution source owners located in nonattainment areas submit an Emission Statement to local regulatory authorities. Camp Bullis is not located in an ozone nonattainment area and, therefore, is not subject to a mandatory submittal under this rule. Title V of the CAA amendments requires each state to institute a permit program that assesses fees based on annual air pollutant emissions. Emission summaries provided by the Emission Statement may be used to calculate any applicable fees that are based on actual pollutant emission rates. The Texas Natural Resources Conservation Commission (TNRCC) requires all facilities with emissions greater than regulatory threshold limits to file emission inventory information. Following an emissions survey of more than 43 emissions sources at the installation in 1997, it was determined that emissions from Camp Bullis were less than regulatory thresholds (Army 2000). Therefore, information regarding air pollution sources at Camp Bullis are not reported to the TNRCC. Camp Bullis had no air quality noncompliance problems at the time of the inventory.

3.7 NOISE

3.7.1 Definition of Resource

Noise is defined as a sound that, if loud enough, can induce hearing loss or is otherwise undesirable because it interferes with ordinary daily activities, such as communication or sleep. A

human's reaction to noise varies according to the duration, type, and characteristics of the source; distance between the source and receiver; receiver's sensitivity; background noise level; and time of day. To quantify noise and describe its effects on the natural and human environment, a basic description of sound terminology is presented.

Sound is a series of vibrations (energy) transmitted through a medium (such as air or water) that are perceived by a receiver (e.g., humans). It is measured by accounting for the energy level represented by the amplitude (volume) and frequency (pitch) of those vibrations and comparing that to a baseline standard. Specifically, airborne sound pressure levels are described in terms of a comparison to the pressure the atmosphere exerts under standard conditions (i.e., at sea level and 59° Fahrenheit [F] / 15° Celsius [C]). Under standard conditions, the atmosphere exerts a pressure of 100,000 Pascals (14.7 pounds per square inch). As a sound wave moves through the atmosphere, a temporary increase in pressure occurs; it is the pressure change that is detected as sound. The magnitude of the pressure change is the loudness, and the frequency of the temporary changes is the pitch.

The following example illustrates the wide range of pressure differences detectable by the human ear and its incredible sensitivity: a whisper heard 2 meters (M) away creates a pressure change from standard atmospheric pressure of approximately 0.0006 Pascals, whereas an M16 rifle at the firer's ear creates a change of 1,000 Pascals. Although one event represents 1,666,666 times more energy than the other, both represent sounds that can be heard by a human ear. One method for readily comparing these vast pressure differences to describe them in exponential rather than algebraic terms. The use of a logarithmic scale, rather than a linear one, simplifies the units and more closely depicts the way the human ear actually perceives sound levels. The decibel (dB) is a logarithmic ratio of the increase to atmospheric pressure a sound event causes, compared to a defined reference pressure, which happens to be the lowest detectible pressure recognized by the human ear (0.00002 Pascals).[1] When using decibels to depict airborne sound pressure levels, 0 dB is the threshold of human hearing and exponential increases occur every 10 dB. An event that generates 60 dB of sound is 10 times louder than one that generates 50 dB. Or, in the example above, the whisper (0.0006 Pascals) translates to 29 dB and the M16 rifle shot (1000 Pascals) is 153 dB.

The sound pressure level represented by a given decibel value is usually adjusted to make it more relevant to sounds that the human ear hears especially well; for example, an A-weighted decibel dB(A) is derived by emphasizing mid-range frequencies to which the human ear responds especially well and de-emphasizing the lower and higher range frequencies. In addition to weighting based on frequency, sound levels are further differentiated by factoring in the effect of time since sound levels normally vary in intensity and are not continuous. For example, the measure of the sound pressure at a given instant and known distance is referred to as sound pressure level (SPL). An aircraft with jet engines overflying at 100 feet typically would have a measured peak SPL, known as L_{max}, of 120 dBA. However, that sound pressure level rises to a peak and then falls off fairly rapidly as the aircraft approaches and then moves away from the receiver. A means of accounting for duration of a noise event, the number of events over a period of time, and the intensity of the events becomes necessary in order to compare in a standardized fashion. For single-event descriptions, L_{max} and the sound exposure level (SEL) are used. The SEL takes all the energy from the duration of a single event and averages the energy over one second.

To describe cumulative noise exposure from repeated events, different metrics are employed. The sum of all sound energy occurring over a particular period of interest (e.g., an hour, a day) is

[1] The formula for calculating a decibel level is: $20 \log_{10} \{P/P_0\}$ where P is the pressure level of an event and P_0 is the reference pressure (0.00002 Pascals).

referred to as equivalent sound level (L_{eq}). One common way to describe ambient noise exposure over an extended period of time is as a day-night average sound level (DNL) measured in decibels. This is a form of an equivalent sound level that accounts for the total sound energy occurring over a 24-hour period, but attributes a 10 dB increase to those events occurring between the hours of 10 p.m. and 7 a.m. (night), a time during which most people sleep and are more sensitive to noise. Because of the logarithmic nature of the decibel, this means that a single nighttime event creates the same DNL as 10 identical events during the day. The DNL is used in this assessment when describing noise from aircraft and range operations. Another equivalent sound level metric, $L_{eq(h)}$, describes the average sound level over a one-hour period and does not attribute any increase for events occurring during the nighttime period. The $L_{eq(h)}$ metric is used when assessing roadway noise.

The use of these noise metrics is chosen based on federal guidelines developed in order to be able to quantify noise and the reaction of those exposed to it in a community in a sound, objective, and scientifically valid fashion. The federal government established a working group to review the science of noise and recommend standards for its agencies to use when assessing the effects from noise. The Federal Inter-agency Committee on Noise (FICON), and its predecessor Federal Interagency Committee on Urban Noise (FICUN) reviewed the existing science on the subject of urban, industrial, and aircraft noise; land use compatibility; and health and human safety and validated the use of DNL as the appropriate metric for describing noise from aircraft operations and assessing its effects. The DoD uses DNL as its common metric to describe noise exposure when assessing noise from aircraft overflights, range operations, and other similar discontinuous but repetitive occurrences. Within the DoD, the Air Installation Compatible Use Zone (AICUZ) program that assesses noise related specifically to aircraft and range operations has been developed and adopted by its services, including the Army. AICUZ studies assess predicted noise exposure in terms of DNL. The DNL metric has also been adopted by the U.S. Department of Housing and Urban Development (HUD), the FAA, and the USEPA as a common standard for assessing noise levels for compatibility with land uses, health and human safety, and effects on wildlife. The Department of Transportation (DOT), Federal Highway Administration (FHWA), however, uses the $L_{eq(h)}$ metric in addition to the DNL when assessing the effects of increased traffic on roads from motor vehicles.

The DoD AICUZ program outlines compatible land uses by first predicting noise exposure zones or contours depicting lines of equal noise exposure that would result from normal operations at a particular place, and then by recommending land uses that are ordinarily considered compatible with the predicted noise exposure level for those locations contained within the noise contours (DoD 1977; Army 1999). Despite its title, the DoD AICUZ program addresses sources of noise from more than aircraft operations; it anticipates and requires modeling and predicting noise exposure from operation of small arms ranges and impact areas. The Army's Installation Environmental Noise Management Program (IENMP) is that service's implementation of the DoD directive to assess and disclose noise created by operations on an installation with the goal of preventing the encroachment of incompatible uses on the surrounding areas in a way that ultimately compromises the viability of the installation. In addition to assessing land use compatibility from the perspective of noise, the DoD AICUZ program assesses accident potential and outlines compatible uses in those areas nearest to the runway ends.

The IENMP defines three noise zones and a land-use planning zone, using A-weighted DNL levels:

- Noise Zone III – land with a predicted noise exposure greater than 75 DNL;
- Noise Zone II – land with a predicted noise exposure equal to or greater than 65 DNL but less than or equal to 75 DNL;

- Noise Zone I – land with a predicted noise exposure less than 65 DNL; and
- Land Use Planning Zone – a subset of Noise Zone I, land with a predicted noise exposure between 60 DNL and 65 DNL.

Within a given zone of noise exposure, certain land uses are considered acceptable or unacceptable. For example, residential uses are normally not considered compatible with a predicted noise exposure in excess of 65 DNL, and an office use is not considered compatible in an area having a predicted noise exposure greater than 80 DNL (FICUN 1980). Predicted noise exposure contours are specifically developed for each Army installation that has flying activities and weapons ranges; these contours are based on the locations and intensities of the activities on the installation. The contours are released to the surrounding jurisdictions to guide their land-use planning or are used to guide facilities planning on Army posts and camps.

The DOT and FHWA have issued guidelines on roadway noise and land-use compatibility. Using the $L_{eq(h)}$ metric for the noisiest traffic hour (which correlates to the peak traffic flow to which a road is designed), the regulations establish Noise Abatement Criteria for road projects and provide a framework for assessing when the noise generated from traffic noise is significant.

Apart from noise associated with the operation of vehicles, aircraft, and weaponry, federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. Occupational safety and health regulations are a primary method of enforcing these guidelines and standards.

3.7.1.1 *Hearing Loss*

The potential for permanent hearing loss arises from direct exposure to noise on a regular, continuing, long-term basis (16 hours a day for 40 years) to levels above 75 DNL. Based on a USEPA report (1974), hearing loss is not expected in people exposed to 75 DNL or less. The FICUN found that hearing loss due to noise: (1) may begin to occur in people exposed to long-term noise at or above 75 DNL; (2) will not likely occur in people exposed to noise between 70 and 75 DNL; and (3) will not occur in people exposed to noise less than 70 DNL (FICUN 1980).

3.7.1.2 *Noise Interference*

Elevated noise levels can potentially interfere with speech, cause annoyance, or disturb sleep. Annoyance resulting from noise exposure is typically measured via community surveys where the level of tolerance can vary greatly among individuals (USEPA 1974). It is estimated that 13.5 percent of the population exposed to 65 DNL will be highly annoyed, while 37 percent will be highly annoyed if exposed to a 75 DNL (USEPA 1974). Research also indicates that the "type of neighborhood" a person inhabits influences their noise annoyance level, with instances of noise complaints being greater for those living in rural areas than in suburban or urban residential areas (Schomer 2001).

Interior noise levels are typically lower than exterior levels due to the attenuation of the sound energy by the structure, with the amount of noise level reduction provided by a building dependent upon the type of construction and the number of openings such as doors, windows, chimneys, and plumbing vents. The approximate reduction in interior noise is 15 dBA when windows are open and 25 dBA for closed windows (USEPA 1974).

3.7.2 Region of Influence

The ROI for a noise assessment is a function of the type of action proposed. For the proposed action and its no action alternative, the ROI would include all of Camp Bullis and the areas immediately adjacent to and surrounding its boundaries.

3.7.3 Affected Environment

The noise environment at Camp Bullis primarily consists of noise created from the operation of small arms ranges, the use of explosive simulators in training areas and ranges, the use of explosives during quarrying and training exercises, and aircraft noise. Other sources of noise include vehicle noise, routine operation of equipment and machinery (e.g., generators, Heating, Ventilation and Air Conditioning [HVAC]), and operation of construction equipment. The U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) has extensively studied the noise environment at Camp Bullis, preparing an analysis of the noise environment of Camp Bullis and its environs in 1999 (Army 1999). This work built upon studies conducted by the Army during the 1980s and 1990s. The effects associated with the presence of noise at Camp Bullis are typically examined in light of their effects on human health and safety (Section 3.9).

3.7.3.1 *Small Arms and Explosive Simulator Ranges and Maneuver Areas*

The predominant source of noise on Camp Bullis is from the operation of its small arms ranges and from the firing of large caliber weaponry from vehicles and aircraft into the Camp Bullis impact area rather than from aircraft operations. This environment is fully described in the post's most recent Environmental Noise Management Plan (ENMP), released in 1999 (Army 1999). The use of explosive simulators in training areas is also a notable contributor to the noise environment. Other sources of noise include explosives used in quarrying operations and in training military engineering units, as well as intermittent construction noise and traffic noise.

The predicted noise exposure contours shown in the 1999 ENMP were developed by modeling the predicted noise exposure that would occur from the expenditure of small arms ammunition over the course of a typical year; for example, the use of over 2.1 million 5.56-mm rounds and over 2.0 million 7.62-mm rounds over the course of a year on Camp Bullis' ranges, along with various other types of ammunition, was modeled. Additional modeling to develop predicted noise exposure contours that would result from the use of large caliber weapons and explosive simulators was also a part of the study. The 1999 ENMP did not calculate noise exposure from the operation of motor vehicles or from maneuvering tanks, armored personnel carriers, or Bradley Fighting Vehicles.

3.7.3.2 *Aircraft Noise*

Aircraft noise at Camp Bullis is generated by C-130 *Hercules* cargo aircraft using the Combat Assault Landing Strip (CALS) at the northern end of the post in Training Area 12 (Maneuver Area 6) and by helicopter traffic using the various landing sites and helipads on Camp Bullis. In 1983, the Army conducted an onsite measurement study for the CALS operations for a typical "busy day" consisting of four operations per day. Since DNL is a measure of both intensity and frequency of occurrence, the combination of a relatively quiet aircraft (compared to a jet aircraft) and a relatively low frequency of operations does not generate a Noise Zone II or III contour. The study found that this level and type of operation would generate a predicted noise exposure point (located 200 m north of the airstrip centerline) of 59.1 DNL (Army 1999).

Helicopter noise on Camp Bullis stems from three main activities: transport of soldiers and materiel, concentrated at the southern end of the installation; airdrop (parachute) operations, concentrated at the northern end of the installation; and medical evacuation training conducted as part of the combat medic training given at Camp Bullis in its various training areas. Of the three types, medical evacuation training is the most common.

UH-60 *Blackhawk* helicopter flights generally originate on Fort Sam Houston or at Martindale Army Airfield, or at other airfields outside the San Antonio area. They follow preferred routes under air traffic control procedures established for these operations. One of the preferred routes

for helicopter traffic to enter the airspace above Camp Bullis follows Military Highway, a road leading from the southern installation boundary to the cantonment area. From there, the helicopter either prepares to land at a helipad located near the Parade Ground, or it moves on to one of the training areas on post. Helicopter operations at Camp Bullis, while not unusual, are not frequent enough to generate a predicted noise exposure above 65 DNL. Therefore, no noise exposure contours at 65 DNL or greater that would be associated with helicopter operations are plotted, exist, or are released to local governments under the DoD AICUZ program. Generally, the operations average fewer than two per day (Army 1999).

3.7.3.3 *Roadway Noise*

No studies of roadway or traffic noise have been conducted at Camp Bullis. The relative isolation of the installation confines noise from vehicle operations to within its boundaries. For automobiles, the engines and tires are the principal sources of roadway noise; at lower speeds, the engine is the predominant source and at higher speeds the tires are predominant.

3.7.3.4 *Predicted Noise Exposure on Camp Bullis*

Range Operations and Aircraft Overflight

The resultant predicted noise exposure from expenditure of ammunition during routine range operations and aircraft overflight is shown as a set of noise nodes that are centered about the small arms ranges, the grenade launcher range, and the heavy demolition ranges. The cantonment area lies at the southern end of the post and is generally located in the vicinity of Military Highway and Camp Bullis Road. The closest ranges to the cantonment area are Ranges 1 through 8, which are small arms ranges on which M-16 (5.56 mm rounds) and M-60 (7.62 mm rounds) machine guns are fired. These ranges lie approximately 1,000 feet north of the 5100 block of buildings on Camp Bullis. The predicted noise exposure in the vicinity of this block of buildings is less than 65 DNL or Noise Zone I (Army 1999).

Construction Noise

Noise associated with the operation of machinery on construction sites is typically short-term, intermittent, and highly localized. The loudest machinery generally produces peak SPLs ranging from 86 to 95 dBA at 50 feet from the source (Table 3-3). It is important to note that the peak SPL range for construction equipment noise does not take into account the ability of sound to be reflected/absorbed by nearby objects, which would further reduce noise levels. Additionally, interior noise levels would be reduced by 18 to 27 dBA due to the noise level reduction (NLR) properties of the building's construction materials (FAA 1992).

Table 3-3. Peak Sound Pressure Level of Heavy Equipment from a Distance of 50 Feet.

Equipment	Noise Generated* (dB[A])
Bulldozer	95
Scraper	94
Front Loader	94
Backhoe	92
Grader	91
Crane	86

*Noise from a single source
Source: Reagan and Grant 1977

The DNL that results from operating construction equipment is a function of the frequency, duration, and time of day during which the activity occurs. For example, a bulldozer that generates 95 dBA at 50 feet and that is operating continuously for 365 days from 6 a.m. to 10 p.m. for an entire year (15 "day" hours and one "night" hour) would create a predicted noise exposure of 64 DNL.

Roadway / Vehicle Noise

Despite the lack of site-specific traffic noise studies at Camp Bullis, the Army has measured the peak noise that its equipment generates when in operation. The primary vehicles in use on roadways at Camp Bullis would be trucks such as the HMMV (M996/M997), M1010 ambulance, the M44 2.5 ton truck, and similar vehicles. Additionally, some of the larger vehicles that are similar to fuel tankers and semi-trailers are used. The Army collected the noise data for these vehicles from the perspective of protecting the health of vehicle operators (Army 2005b). The data are presented at Table 3-4.

Table 3-4. Peak Sound Pressure Level of Army Vehicles Measured at Crew Station.

Equipment	Noise Generated* (dB[A])
M996/M997 (HMMV)	78-94 (dBA)
M1010 Ambulance (measured in patient area)	>85 (dBA)
M44 2.5 Ton Truck	72-97 (dBA)
M984E1 (HEMTT)	85-93.1 (dBA)
M1A2 (Abrams Tank)	96-114 (dBA)
M2A2 (Bradley Fighting Vehicle)	74-115 (dBA)

*Noise from a single source
Source: Army 2005b

The data shown reflect operations ranging from stationary operations at idle power settings to those power settings required for the vehicles maximum rated speeds. It should be noted that the heavier scale weapons system platforms, commonly known as tanks, armored personnel carriers and fighting vehicles, such as the M1 Abrams tank or the M2 Bradley Fighting Vehicle, are typically confined to maneuver areas and are transported to and from the maneuver areas on other vehicles. Therefore, these weapons systems do not typically generate traffic noise.

Given these noise values, which essentially are similar to those of the construction machinery presented above, it would be possible to model roadway noise. A traffic noise model is not presented in this assessment, however, because the level of traffic necessary to generate a >65 DNL noise contour is beyond the operational and fiscal constraints of training activity at Camp Bullis. Similar to the calculation of the DNL from operating a bulldozer, a continuous traffic stream of HMMVs running from 6 a.m. to 10 p.m. past a particular point would be required, before noise levels begin approaching a 65 DNL.

3.8 HAZARDOUS WASTE/HAZARDOUS MATERIALS

3.8.1 Definition of Resource

Introduction

Hazardous and toxic materials include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released or improperly managed. The terms hazardous material, hazardous waste, and hazardous substance have specific legal and scientific definitions within federal regulations.

Hazardous materials are defined under DOT regulations as chemicals that present risks to safety, healthy, and property during transportation. DOT regulations include requirements for shipping documents, packaging, labeling, transport vehicle placards, and training of personnel who handle hazardous materials.

Hazardous wastes are defined and regulated by the Resource Conservation and Recovery Act (RCRA) and the Hazardous and Solid Waste Amendments of 1984. RCRA considers a waste hazardous if it meets certain levels of reactivity, ignitability, corrosivity, or toxicity, or is otherwise listed as a hazardous waste in 40 CFR §261. RCRA regulations include detailed requirements for facilities that generate, transport, store, treat, or dispose of hazardous wastes.

Hazardous substances are defined by the Clean Water Act (CWA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) as chemicals that are harmful to aquatic life or the environment if spilled or released into the environment.

3.8.2 Region of Influence

The ROI consists of operational areas on Camp Bullis that handle or have the potential to contain hazardous materials or waste and the solid waste.

3.8.3 Affected Environment

Army policy for hazardous waste management and waste-related pollution prevention is outlined in Section 5.0 of AR 200-1, Environmental Protection and Enhancement. The Installation Restoration Program (IRP) is the basis for response actions at military installations for sites contaminated with hazardous waste under the provisions of CERCLA and the Superfund Amendments and Reauthorization Act (SARA).

Current activities and maintenance processes at Camp Bullis sometimes require the use of hazardous and toxic chemicals (paints, solvents, thinners, adhesives, oils, cleaners, pesticides, batteries, acids, bases, compressed gases, and chlorofluorocarbons). The Army and USEPA encourage a reduction in the use of these materials. Most chemicals used in training activities or maintenance of Camp Bullis are stored at FSH or ordered when needed.

Historic hazardous materials and waste issues of concern at Camp Bullis include asbestos-containing materials (ACMs), lead-based paint, and potential groundwater and/or soil contamination from inactive landfills.

3.8.3.1 *Storage Tanks and Oil/Water Separators*

In conjunction with activities at the motor pool, there are two underground storage tanks (USTs) at Building 6104. These tanks are active and contain diesel fuel and unleaded gas. There is also an oil/water separator located at the motor pool.

3.8.3.2 *Pesticides*

Record keeping and application of pesticides at Camp Bullis is the responsibility of the Entomology Shop at Fort Sam Houston. Pesticide use is documented monthly in the Pest Management Report and pesticide application follows federal, state, and local statutes; DoD

Directives; Army Regulations; and Camp Bullis Pest Management Plan. The methods used at Camp Bullis ensure the safe use of pesticides and are in compliance with procedural and statutory criteria.

3.8.3.3 *Ordnance*

There have been several finds of UXO throughout the maneuver areas of Camp Bullis. These UXOs are disposed of by the 797th Ordnance Detachment from Fort Sam Houston as needed.

3.8.3.4 *Asbestos-Containing Materials*

Asbestos is the name for a group of natural minerals that separate into strong, fine, heat-resistant fibers. When asbestos degrades into microscopic fibers, it becomes a health hazard. This can happen when ACMs are disturbed, typically during renovation or demolition of older structures. Degraded or crumbled asbestos is termed "friable" asbestos.

ACMs have been used in a variety of forms for thermal protection, acoustical and decorative purposes, boiler and pipe insulation, construction materials, and appliances. Asphalt shingles are a potential ACM and have been used at Camp Bullis as roofing material.

Buildings most likely to contain friable asbestos are those built or remodeled between 1945 and 1986. The Army asbestos policy is established in Section 8.0 of AR 200-1, Environmental Protection and Enhancement. When removal of asbestos is required, Camp Bullis follows industry and Army standards for the encapsulation, removal, and disposal of any ACM.

3.8.3.5 *Polychlorinated Biphenyl*

According Army records, any electrical transformers containing polychlorinated biphenyls (PCB) have been properly removed and disposed of at the base.

3.8.3.6 *Radon*

Camp Bullis tested 100 buildings in 1992 for radon. All samples were below the threshold of concern according to the USEPA guidelines.

3.8.3.7 *Lead-Based Paint*

Lead is a highly toxic metal that was used for many years in paint on and around buildings. Lead exposure can cause a range of health effects, from behavioral problems and learning disabilities to seizures and death. Army lead hazard management policy is outlined in Section 4.6 of AR 200-1, Environmental Protection and Enhancement. All buildings at Camp Bullis constructed or renovated prior to 1978 have the potential to contain lead-based paint. Demolition or renovation of structures built prior to 1978 typically requires removal of the lead-containing materials. In such cases, Camp Bullis follows industry and Amy standards for the encapsulation, removal, and disposal of the lead-based paint or lead-containing materials.

3.8.3.8 *Installation Restoration Program Sites*

Contamination of groundwater and soil is tracked and mitigated through the defense site Environmental Restoration Tracking System (DSERTS). There are six DSERTS sites at Camp Bullis: two landfills, an unexploded munitions site, a surface impoundment/lagoon, a waste treatment plant, and an oil water separator. With the exception of the two landfills and munitions site, the other areas were investigated, and it was determined that no further action was required for those sites.

A Hazardous Waste Permit (RCRA Part B Permit HW-50335) was issued to Camp Bullis in 1997 pertaining to the management of hazardous waste at the Open Burn/Open Detonation unit (munitions site). This is the only regulated hazardous waste management unit at Camp Bullis.

Groundwater monitoring results have indicated the presence of volatile organic compounds (VOC), (acetone, benzene, and carbon disulfide), explosives (Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [HMX], Hexahydro-trinitro-triazine [RDX], and nitrobenzene) and barium. In accordance with permit requirements, groundwater contaminated by the munitions site was sampled, and the results confirmed the presence of VOCs, semi-volatile organic compounds, metals, explosives, dioxins/furans, perchlorate, and sulfide (Army 2003).

Two inactive landfills, Site 17 and Site 08, are present at Camp Bullis. Site 08 is located in the central area of Camp Bullis near Lewis Valley Road. Site 17 is located in the southwestern area of Camp Bullis near Marne and Bullis Roads.

3.9 HUMAN HEALTH AND SAFETY

3.9.1 Definition of Resource

Safety topics considered for this proposed action include the risks associated with field training activities, including small arms operation, and EOD disposal.

3.9.2 Region of Influence

The ROI for safety is the training areas and ranges located throughout Camp Bullis.

3.9.3 Affected Environment

The *Army Safety Program* prescribes policies and procedures to protect and preserve Army personnel and property against accidental loss (AR 385-10, *Army Safety Program*). It provides for public safety incident to Army operations and activities, and safe and healthful workplaces, procedures, and equipment. Commanders of installations are required to apply Occupational Safety and Health Administration (OSHA) and other non-Army regulatory or consensus safety and health standards to military-equipment, systems, operations, or workplaces as is practicable. Whenever possible, commanders evaluate the level of safety provided by established safety and occupational health standards to determine if additional safeguards are required. All workplaces are inspected at least annually using Standard Army Safety and Occupational Health Inspections procedures. EOD disposal is conducted with specifically trained personnel in accordance with AR 75-15, *Policy for Explosive Ordnance Disposal*, to ensure safety of personnel and property.

3.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.10.1 Definition of Resource

Socioeconomic analyses generally include detailed investigations into the prevailing social and economic conditions of a community of interest. Such investigations examine the population, income, employment, and housing characteristics of an area. The prevailing social and economic conditions may be affected by the implementation of a proposed federal action. Additionally, populations of special concern as defined in EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 1994), are examined to determine whether impacts fall disproportionately upon these populations.

EO 12898 requires a federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations." A message from the President concerning EO 12898 stated that federal agencies should collect and analyze information concerning a project's effects on minorities or

low-income groups, when required by NEPA. If such investigations find that minority or low-income groups experience a disproportionate adverse effect, then avoidance or mitigation measures are to be taken.

A population is considered a minority population if it is composed of the one or more of certain population groups (American Indian or Alaskan Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic) and if those groups exceed 50 percent of the population in an area. A minority population percentage of the affected area that is meaningfully greater than the minority population percentage in the general population is also considered a minority population. Race and ethnicity are two separate categories of minority populations. A minority population can be defined by race, by ethnicity, or by a combination of the two distinct classification. Definitions of the various races as used in census data and executive orders are presented in Appendix B.

Each year the U.S. Census Bureau (USCB) defines the national poverty thresholds, which are measured in terms of household income dependent upon the number of persons within the household. Individuals falling below the poverty threshold ($17,603 for a household of four in 2000) are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as *poverty areas* (USCB 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract becomes an *extreme poverty area*.

3.10.2 Region of Influence

The ROI for a socioeconomic analysis depends upon the context and intensity of the proposed action and its alternatives. For a minor construction project census tract level analysis in the context of a more regional setting is appropriate. The Camp Bullis socioeconomic ROI includes Census Tract 191600 which captures almost all of Camp Bullis and the adjacent Camp Stanley recreational area in the context of the Bexar County (San Antonio) region. It should be noted that this census tract contains an unusually low population given the lack of structures intended for permanent residential occupancy on the Camp Bullis and Camp Stanley recreational area; in 2000, only 16 residents were enumerated for this census tract (USCB 2000). Given the unusual circumstance of so small a set of data, the inclusion of adjacent census tracts is warranted.

The ROI for an environmental justice analysis depends upon the anticipated effects an action might have on particular resource areas. An analysis conducted to determine whether air quality impacts are disproportionate would necessarily have a different ROI from one examining whether water quality impacts are disproportionate. However, a threshold question for an economic justice analysis would be whether an action has an impact (i.e., a significant effect).

3.10.3 Affected Environment

The relevant data sets for assessing the socioeconomic setting of Camp Bullis is the San Antonio Metropolitan Statistical Area (MSA) demographic characteristics and those of Camp Bullis and its adjacent census tracts. The MSA consists of Bexar, Comal, Guadalupe, and Wilson counties. The City of San Antonio lies within Bexar County and Camp Bullis lies predominantly in Bexar County, with a minor amount of acreage at the north end of the post lying in Comal County. Figure 3-1 shows the census tracts in the vicinity of Camp Bullis. All data discussed below are derived from the 1990 and 2000 Census of Population and Housing and the most recent local area personal income data (1990/2000) from the Bureau of Economic Analysis (BEA). A full discussion of the data is given in Appendix B.

The Camp Bullis data set includes USCB Census Tract 191600, block group 1, which contains Camp Bullis, and adjacent census tracts[2] and block groups[3]. The population within these combined census tracts containing the Camp Bullis ROI increased 87.56 percent between 1990 and 2000, while the combined block groups increased 203.21 percent during this period (USCB 1993, 2002).

3.10.3.1 *Population and Demographics*

The population within the San Antonio MSA increased considerably between 1990 and 2000. During this 10-year period, the population grew from approximately 1.3 million to 1.6 million residents, or about 22 percent. Census data also show that the area surrounding Camp Bullis is experiencing a growth rate that is faster than that of Bexar County or the MSA as a whole. Neither the combined census tracts surrounding Camp Bullis nor the block groups would be considered a concentrated minority area.

3.10.3.2 *Income and Employment*

Median personal income levels increased within all household types in the ROI between 1990 and 2000. The largest nominal percent changes were observed in the San Antonio MSA. The census tracts surrounding Camp Bullis indicate a considerable degree of affluence when compared to the San Antonio MSA or Bexar County.

Earnings data indicate that personal income within the San Antonio MSA is $41.1 billion (BEA 2002a). Bexar County accounts for $36.3 billion of that total (BEA 2002a). The vast majority of that income is from non-farm sources; farm income was $74 million during this period (BEA 2002a). During the period of 1990-2000, only federal, civilian earnings decreased in both the San Antonio MSA and Bexar County, which may reflect the base closings and mission realignments that have occurred during these years (BEA 2002a).

The poverty rate in Bexar County is 15.9 percent and 15.1 percent in the MSA (USCB 1993, 2002). Within the Camp Bullis ROI, the 2001 poverty rate within the combined census tracts was 3.01 percent, and within the combined block groups, it was 2.18 percent in 2000 (USCB 2002). This is significantly below the MSA or Bexar County averages; therefore, the census tracts surrounding Camp Bullis are not considered a poverty area.

[2] USCB 2000 Census Tracts immediately outside Camp Bullis include 191804, 191805, 191803, 182101, and 310700.

[3] USCB 2000 Census block groups immediately outside Camp Bullis include block groups 1 and 2 in Census Tract 191804, block group 2 in Census Tract 191805, block groups 1-3 in Census Tract 191803, block group 1 in Census Tract 182101, and block group 2 in Census Tract 310700.

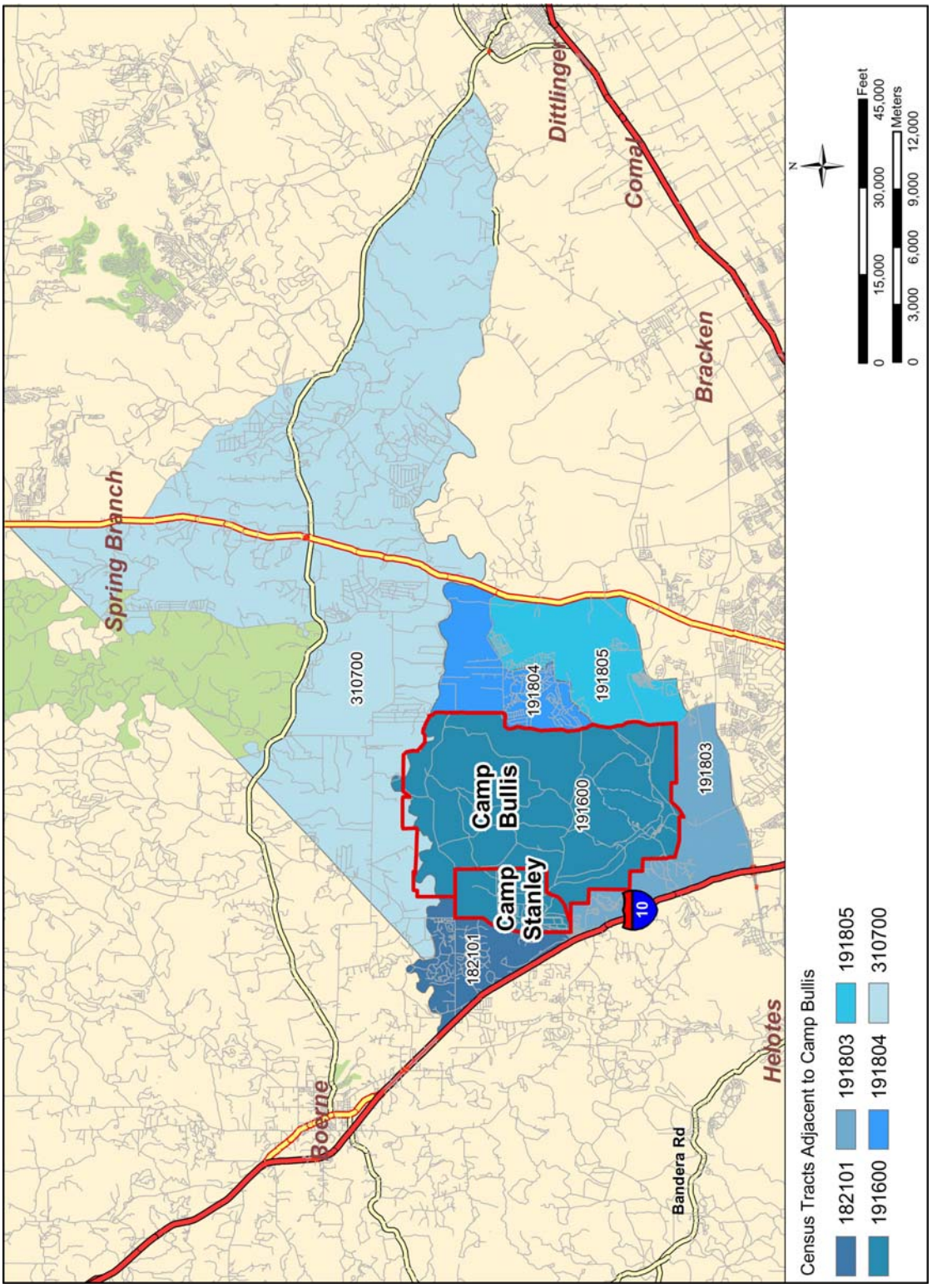

Figure 3-1. USCB 2000 Census Block Groups Within and Surrounding the Camp Bullis ROI

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4.0 ENVIRONMENTAL CONSEQUENCES

Potential environmental impacts are determined by first understanding the existing conditions in the affected environment. The impact analysis process involves evaluating the condition of existing environment (Section 3) and using the details of the proposed action and alternatives (Section 2) to assess potential impacts. This section presents the methods of analysis applied in this EA to determine the potential impacts to various resource areas. The environmental impact analysis process is designed to focus analysis only on those environmental resources that could potentially be affected.

The proposed action (increasing utilization to 1 million man-days per year) is analyzed, as well as the no-action alternative. Table 4-1 provides a summary of the environmental consequences associated with implementing either of those alternatives that are carried forward for detailed analysis.

Table 4-1. Alternatives Comparison Matrix Summary – All Resource/Issue Areas.

Environmental Attributes (Threshold Criteria)	Alternatives	
	A (Proposed Action)	B (No Action)
Airspace Management & Use		
restricts civilian traffic in region	No	No
increases need for controlled airspace	No	No
generates need for special use airspace	No	No
Biological Resources		
vegetation communities affected, expressed in percent of installation	2%	2%
number of protected species affected	0	0
Cultural Resources		
number of eligible or potentially eligible sites affected	0	0
Water Resources		
number of surface water features affected	0	0
effects to groundwater	No	No
Earth Resources		
depletion of geologic resources	No	No
adverse impact to karst features	No	No
adverse impact to soils	No	No
Air Quality		
change to attainment status	No	No
Noise		
permanent increase to unacceptable levels	No	No
Hazardous Materials and Hazardous Wastes		
appropriate disposal of all hazardous wastes	Yes	Yes
appropriate handling and storage of hazardous materials	Yes	Yes
ground-disturbing activities within an IRP site	No	No
Human Health and Safety		
increased risk exposure to trainees	No	No
Social or Economic Resources (including Environmental Justice)		
unacceptable change in personal income or employment	No	No
number of minority and/or low-income populations affected	0	0

The CEQ implementing regulations (40 CFR §1501.7) for NEPA state that the lead agency shall identify and eliminate from detailed study those issues that are not important or which have been covered by prior environmental review, narrowing the discussion of these issues in the document to a brief presentation of why they would not have a dramatic effect on the human environment.

In accordance with this regulation, issues eliminated from detailed study in this EA, include land use and visual resources.

The proposed action does not include any construction projects or changes to existing training areas, maneuver areas, or ranges. No increase in civilian or military staffing levels is proposed. Therefore, no changes to existing land use or the visual setting and context is proposed. Accordingly, these resources were not discussed in Section 3 and no analysis of potential effects arising from the action is presented.

4.1 AIRSPACE MANAGEMENT AND USE

An impact to airspace management and use could occur if the proposed action or alternative: (1) restricts movement of other air traffic in the area; (2) conflicts with air traffic control in the region; (3) changes operations within airspace already designated for other purposes; (4) results in a need to designate controlled airspace where none previously existed; (5) results in a reclassification of controlled airspace from a less restrictive to a more restrictive classification; or (6) results in a need to designate regulatory special-use airspace.

4.1.1 Alternative A - No Action

Under this alternative, aircraft operations would continue at Camp Bullis as described previously. The CALS site, the medical evacuation training lanes, and other rotary wing operations would continue to be used in the same manner as they have been for many years. Airspace management and use would not change. There would be no change to the existing airspace in the vicinity of Camp Bullis or the region northwest of the San Antonio International Airport.

4.1.2 Alternative B - Proposed Action

Implementation of Alternative B would not require any change to airspace or airspace management. The fixed-wing aircraft using the CALS site would continue to employ approach and departure procedures already established in AMEDD C&S and FSH Regulation 350-1, which include obtaining prior permission from Camp Bullis range control personnel, prior mission planning and coordination with the FAA, and adherence to military and civilian flight operating procedures. The flight activities at Camp Bullis would not be appreciably different from the existing levels of use. As a result, the increased usage of Camp Bullis for training action would not generate a need for reclassification of the existing San Antonio Class C airspace nor does it require establishment of Class D or Class E surface areas at Camp Bullis. Additionally, the proposed action would not require establishment of new or alteration of existing special-use airspace. Therefore, the increased training activities at Camp Bullis would not adversely affect civilian or other military users of the airspace.

The criteria for establishment and maintenance of the existing San Antonio Class C airspace are based on the number of passengers using the primary airports as well as the number of instrument operations occurring at the primary and satellite airports (FAA 1993). The proposed action and its associated flying activity, combined with regional flying activity occurring from the airfields in the region, would continue to meet the criteria for Class C airspace for San Antonio International Airport. Compared to the level of flight activity at that airport, 238,233 operations during FY 2004, the flying activity at Camp Bullis is insignificant (FAA 2005g). Aircrews flying fixed and rotary-wing aircraft would continue to perform training activities such as the combat troop insertion/extraction exercise at the CALS, the medical evacuation training, and the VIP flights. These activities are not similar to the types of flight activities that require the designation of special-use airspace (e.g., air-to-air simulated combat, air-to-ground bombing, flight training acrobatic maneuvering) which is why no special-use airspace exists for Camp Bullis. The

increased level of training activity would not generate a need for additional training airspace and no special-use airspace would be designated.

4.2 BIOLOGICAL RESOURCES

4.2.1 Alternative A - No Action

Implementing the no action alternative would result in no ground disturbance or any increase in the use of natural areas and therefore no alteration/disturbance of existing vegetative cover. As a result, vegetation and wildlife (including T&S species and unique habitats) in the area would not be affected.

4.2.2 Alternative B - Proposed Action

4.2.2.1 *Vegetation*

Implementation of the proposed action would not significantly impact either the quality or diversity of vegetation communities. Impacts on vegetation resulting from troop movement or wheeled and tracked vehicles used for training exercises can be observed throughout the installation. Most of this trampling or vehicle disturbance occurs on level terrain and is estimated to be less than 2 percent of the total installation. Vegetation in these areas recovers quickly, usually within a year. As part of the current ITAM program and in conjunction with the TCA program, training activities are managed and rotated among different training areas to allow for natural recovery, resulting in minimal long-term impacts to vegetation and ecosystems (Bruns 1999).

4.2.2.2 *Wildlife*

Indirect impacts to wildlife can result from loss of habitat, habitat fragmentation, and significant increases in human presence. In general, wildlife on the installation has adapted to mission activities at Camp Bullis, and the anticipated increase in human presence due to the proposed action would not significantly alter habitat within the installation. If existing wildlife and habitat management programs currently in place at Camp Bullis are continued, impacts on wildlife from the proposed action would not be significant. They would, in fact, provide relief from development pressures in the area and result in a positive overall impact to wildlife, particularly endangered species.

4.2.2.3 *Threatened, Endangered, and Sensitive Species*

AR 200-3 requires the preparation of an Endangered Species Management Plan (ESMP) for listed and proposed T&E and their critical habitat. The Draft Endangered Species Management Plan, Camp Bullis, Texas (USACE 1995) was developed under the guidelines of AR 200-3 to accomplish the following goals:

- Describe the T&E species or likely to be found on Camp Bullis Military Reservation in Bexar and Comal counties, Texas, as well as T&E species that are not present on the installation but may be affected by its activities;
- Discuss threats faced by T&E species on the installation;
- Define conservation goals for the installation; and
- Outline management plans for T&E species and their habitats that would enable achievement of the conservation goals.

The Camp Bullis ESMP is based on and consistent with the Endangered Species Act (ESA) and AR 200-3. The Camp Bullis ESMP consulted the following USFWS recovery plans during its preparation: black-capped Vireo Recovery Plan (USFWS 1991); Golden-cheeked Warbler Recovery Plan (USFWS 1992); San Marcos River Recovery Plan (USFWS 1984); Draft San Marcos/Comal (Revised) Recovery Plan (USFWS 1994), Golden-cheeked Warbler Population and Habitat Viability Assessment Report (USFWS 1995b); and the Black-capped Vireo Population and Habitat Viability Assessment Report (USFWS 1995a).

4.2.2.4 *Threatened and Endangered Plants, Invertebrates, Fish, Reptiles and Amphibians, and Mammals*

There are no federal- or state-listed threatened or endangered plants, invertebrates, fish, reptiles, amphibians, or mammals known to be on Camp Bullis that could potentially be adversely affected by the proposed action.

4.2.2.5 *Threatened and Endangered Bird Species*

There are two federal-listed endangered species known to inhabit Camp Bullis, the black-capped vireo and golden-cheeked warbler. These species have been the subject of numerous surveys and are included in the Camp Bullis ESMP that was prepared following consultation with the USFWS pursuant to Section 7 of the ESA (USACE 1994; 1995). The ESMP contains site-specific actions to be taken to protect individual specimens, their critical habitat, and nesting areas.

Habitat maintenance and enhancement are a central focus of the ESMP. Disturbance or alteration of identified habitat could negatively impact these species. Although habitat maintenance aspects of the TCA program are designed to consolidate isolated endangered species habitat, to expand existing good quality habitat, and to draw troop activities away from habitat areas (Bruns 1999), these activities should be performed only after careful review of management alternatives outlined in the current version of the ESMP and in coordination with the USFWS.

The black-capped vireo is known to use several locations throughout Camp Bullis, primarily the impact area; the distribution of the golden-cheeked warbler is more widespread. Impacts from current land management and military activities on the behavior and reproduction of these species have been documented in several studies conducted from 1989 to present. These studies indicate that existing Camp Bullis mission activities and installation management practices appear compatible with these species (Shaw 1988; Stewardship Services 1990, 1991, 1992, 1993, 1994, 1995; Thurber 1996; Weinberg 1997, 1998; Koehler, 1999). However, any unmanaged military training and land-use activities conducted at Camp Bullis could have adverse effects on both species. Unmanaged construction in training areas and support facilities could result in fragmentation of habitat; training activities and weapons training conducted in or near nesting areas during nesting season could affect the reproductive success of these species.

In an effort to assess the impact of installation activities on these two bird species, annual surveys are conducted to monitor the relative density of their respective populations and locations of nesting areas. Any changes in habitat, population, and nesting areas are analyzed, and changes in the ESMP are made annually, if warranted. Mission activities, including training scenarios, are reviewed, taking into consideration mitigation measures required by the ESMP, ITAM plan, and INRMP. Therefore, the proposed action should not adversely impact these species. In the continuing effort to protect and enhance their survival, if any adverse impacts were noted, consultation with the USFWS would be required. The installation will continue to adhere to existing management plans and monitor the resources of the installation.

Several other species of birds with varying status on federal or state T&E species lists have the potential of being at or in the vicinity of Camp Bullis, either because of compatible habitat or during migrations. Habitat at Camp Bullis ranges from suitable to marginal for four of these

species: the American peregrine falcon, Arctic peregrine falcon, whooping crane, and ferruginous hawk. These birds could occur at Camp Bullis during their migration through the area although the probability of incidental sitings is low (Peterson 1988). Other federal- or state-listed species that have not been sited at Camp Bullis but that could be in the vicinity include the reddish egret, interior least tern, mountain plover, piping plover, bald eagle, Mexican hooded oriole, white faced ibis, loggerhead shrike, white-tailed hawk, zone-tailed hawk, wood stork, and Eastern brown pelican. These species could occur at Camp Bullis during their migrations, but the probability of incidental sitings for these birds is considered to be extremely low (Peterson, 1988). For any of these species, any migratory presence of individual specimens at Camp Bullis would be incidental and transient. The proposed action would have no adverse impact on the continued survival or well-being of these species.

4.3 CULTURAL RESOURCES

An activity would have a significant effect on an historic property if it resulted in:

- physical destruction of or damage to all or part of the property;
- alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material reduction, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR §68) and applicable guidelines;
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

4.3.1 Alternative A - No Action

Selecting the no action alternative would result in no ground-disturbing activities and no demolition or construction activities at NRHP-eligible properties, the proposed Camp Bullis Cantonment Historic District, or unidentified archeological resources. Therefore, there would be no adverse impacts on historic resources at Camp Bullis.

4.3.2 Alternative B - Proposed Action

The proposed action would result in no ground-disturbing activities and no demolition or construction activities at NRHP-eligible properties, the proposed Camp Bullis Cantonment Historic District, or unidentified archeological resources. Possible secondary impacts to historic resources may occur with the potential for increased wear and tear on historic wooden buildings and structures. Therefore, thoughtful maintenance and upkeep of these features would be necessary to mitigate any of these impacts. With such maintenance, there would be no adverse impacts on historic resources at Camp Bullis.

4.4 WATER RESOURCES

4.4.1 Alternative A - No Action

Under the no action alternative, conditions at the base regarding water resources would remain the same and there would be no significant impacts due to the selection of the no action alternative.

4.4.2 Alternative B - Proposed Action

Throughout the entire San Antonio region, the allocation and use of water resources are extremely sensitive. A protracted legal battle has been waged since 1991 over water availability and water quality, with particular focus on the Edwards Aquifer and T&E species that depend upon the aquifer.

Due to the sensitive nature of water issues in the region, special attention is paid to potential impacts affecting water availability and water quality as they relate to all mission activities undertaken at Camp Bullis. All personnel participating in training at Camp Bullis are required to attend an annual Environmental Training Forum, which details Camp Bullis water concerns and outlines proper behavior to avoid negative water resource impacts (DPTMSEC 1997).

4.4.2.1 *Surface Water*

The proposed action to increase the usage of the Camp Bullis training facilities would have no significant adverse impacts on surface water. The Army does not propose to divert or alter current streambeds or creeks, nor conduct any other activity that would threaten or damage a unique hydrologic characteristic. The facility uses BMPs such as vegetative buffer zones or diversionary berms, terraces, sediment ponds, and sediment fencing to minimize runoff and potential degradation of water quality caused by training activities. The TCA program promotes brush management designed to draw training activities away from steep slopes, wetlands, and any area where heavy troop activity could cause erosion and subsequent siltation in surface water.

Stormwater pollution is reduced and mitigated through the implementation of the SWPPP for Camp Bullis (Geo-Marine, Inc. 1996). The purpose of the SWPPP is to reduce the potential for stormwater contamination from sediments or other pollutants. Federal regulations require the SWPPP to be updated annually to ensure a continual review of the plan's effectiveness. The Camp Bullis SWPPP identifies areas of risk where pollutants are more likely to be carried away in stormwater runoff; BMPs such as drip pans under vehicles, secondary containment of fuel storage areas, berms, and sediment ponds are used to avoid or minimize impacts.

Camp Bullis also has a Pollution Prevention Plan (PPP) and a Spill Prevention and Recovery Plan (SPRP) for preventing and handling accidental spills. These plans also help to avoid or minimize any potential significant adverse impacts to surface water.

4.4.2.2 *Groundwater*

Camp Bullis obtains its drinking water from the Glen Rose Aquifer. At this time, there are no withdrawal limits on the Glen Rose Aquifer; therefore, water availability and increased water usage due to the proposed action is not an immediate concern. The development of areas around Camp Bullis continues to increase demand for the groundwater supplies in the Glen Rose Aquifer.

Groundwater contamination has been detected in the groundwater at Landfill 8 in the central portion of the installation. Camp Bullis is still investigating the extent of this contamination and determining the manner in which it will be addressed; the installation has an active program to

monitor the potential migration of groundwater contamination from old waste sites. The groundwater at Landfill 8 is part of the Glen Rose, not the Edwards, aquifer.

Camp Bullis does not pump any of its water from the Edwards Aquifer, but relies completely on the Glen Rose Aquifer for potable water. Although there is some evidence that the Glen Rose and Edwards aquifers may be connected in some manner, this connection has not been fully accepted, and the nature of the interrelation between the two aquifers, if any, is not known.

The northern boundary and southeastern portion of the installation provide recharge to the Edwards Aquifer. For the most part, Camp Bullis limits the types of training that may occur in the recharge areas. Activities with little potential for impact, such as orienteering, compass courses, limited bivouacs, and patrolling, are permitted. Wheeled and tracked vehicles are used in the recharge areas only for troop transport and general maintenance of the installation and are restricted to established roads and trails within each of the training areas. Activities with great potential for impact, such as field kitchens, field laundries, field bath units, field refueling, and field decontamination exercises, are not permitted.

Existing and planned mission activities at Camp Bullis should have no significant negative impacts on groundwater quality. Camp Bullis does not use a large amount of water from the Glen Rose Aquifer, nor does it pump from the Edwards Aquifer; the installation no longer disposes of solid waste on site; and lastly, focused management plans, such as the SWPPP and PPP, have been developed for Camp Bullis and are in place to protect against or mitigate any negative effects of the mission activities on the installation would have on groundwater quality.

Camp Bullis is rapidly becoming one of the last regions in Bexar County that still contain relatively pristine portions of the Edwards Aquifer recharge area. As the City of San Antonio expands over its portions of the Edwards Aquifer recharge zone, Camp Bullis remains proactive in its protection of those portions of the recharge zone located within its boundaries and currently is seeking community partners to join in its efforts in recharge enhancement (Bruns 1999).

4.4.2.3 *Floodplains and Wetlands*

Training exercises in floodplains or wetlands could increase erosion from additional traffic, resulting in increased levels of suspended solids. Erosion of the waterways and siltation of the floodplains is minimized, however, by the use of BMPs and preventive measures. Those training activities with greatest potential for causing or aggravating erosion (e.g., tracked vehicle maneuvers) are conducted in a manner designed to minimize any impacts (e.g., stream crossings at specially constructed and designated crossing points only). Wetlands would not be directly affected by updating the mission at Camp Bullis because wetland areas are avoided by all activities. Because these measures are used, there would be no significant adverse impacts to floodplains and wetlands.

4.5 EARTH RESOURCES

4.5.1 Alternative A - No Action

Under the no action alternative, conditions affecting earth resources at Camp Bullis would remain the same and there would be no significant impacts.

4.5.2 Alternative B - Proposed Action

The proposed action has been reviewed in accordance with Section 404 of the CWA of 1977 (33 USC §1251 et seq.) for discharge of fill material into “waters of the U.S.,” including wetlands. Because the continued operation of Camp Bullis would not involve discharge into or filling of wetlands, the Proposed Action would not require contacting the USACE.

One of the guiding principles of Army training is to conduct training in accordance with doctrinally based standards and under realistic combat conditions. ITAM is a key part of the Army's commitment toward realistic training areas. The purpose of the Army's ITAM program is to achieve optimum sustainable use of training lands by implementing a uniform program that includes:

- Inventorying and monitoring of land conditions;
- Integrating training requirements with carrying capacity;
- Educating land users to conduct their activities in a way that minimizes adverse impacts;
- Providing for land rehabilitation and maintenance.

The ITAM program exists to ensure that the Army can continue to train and produce forces of the highest quality—able to deploy rapidly, to fight, to sustain themselves, and to win quickly with minimum casualties—while sustaining training land resources.

4.5.2.1 *Geology*

The proposed action to increase the usage of the Camp Bullis training facilities would have no significant adverse impacts on the geology of the installation. Camp Bullis has several borrow pits and quarries used to obtain sand and gravel for construction and routine maintenance. The amount of materials mined from these areas does not significantly deplete these geologic resources. The continued use of BMPs, particularly erosion and sediment control, and reclaiming (grading and seeding) the land when quarrying is finished further mitigate any long-term impacts from these activities.

4.5.2.2 *Caves and Karst Features*

Soil erosion from training activities on Camp Bullis can result in sedimentation of some caves and karst features. Several of the caves in the southern portion of Camp Bullis are located along or down-gradient from roads and the range impact area (Veni and Associates. 1998a). Rain can wash sediment or other pollutants into these features.

To protect caves and karst features and the quality of water entering these ecosystems, Camp Bullis leaves the area around these features undeveloped and maintains the native vegetation and drainage patterns surrounding them. The sizes of these areas or “buffers” vary depending on the surrounding topography and condition of the vegetation. The buffers are large enough to prevent contaminated surface water runoff from entering the caves or karst features (Veni et al. 1995; Veni and Associates 1996a, 1996b). These hydrologic and biologic preserves (buffers) would have minimal effect on the increased training activities at Camp Bullis, and they would help prevent any negative impact on the caves and karst features due to increased training activities. Hence, the proposed expansion of the Camp Bullis mission would not adversely impact or significantly damage the surface or subsurface caves or karst features of Camp Bullis.

4.5.2.3 *Topography*

The increased usage of the training facilities would have no significant adverse impacts on the physiographic or topographic features at Camp Bullis.

4.5.2.4 *Soils*

The most common impacts on soils at Camp Bullis involve erosion and compaction associated with the operation of wheeled and tracked vehicles, both on roads and trails and off-road during training exercises. Although not widespread, the formation of rills and gullies along some of the roads and trails occurs, particularly on the steeper grades. Regular grading, gravel replacement, and drainage maintenance minimize erosion and/or repair unavoidable erosion impacts. No

significant long-term adverse impacts to soils are anticipated because road and trail maintenance is an integral part of mission activities.

To the maximum possible extent, the operation of all vehicles is limited to designated roads and trails. When vehicles do leave the roadways or trails for training exercises, the weight of the vehicles sometimes causes soil compaction and the formation of ruts that are susceptible to erosion. The majority of training areas are located on the Crawford/Bexar or Tarrant soils that cover a significant portion of the installation, including areas over the Edwards Aquifer recharge zone. Both of these soils have a very low to moderate potential for erosion, thereby facilitating erosion management and impact minimization.

Special attention is focused on training where the activities occur on the recharge zone of the Edwards Aquifer. Training activities in the recharge area of the installation are limited to foot traffic and land navigation exercises. Wheeled and tracked vehicles are used in the recharge areas for troop transport and general road and trail maintenance only, and are restricted to established roads and trails within each of the training areas. Some field training occurs on relatively steep terrain outside the recharge zone; soil conditions are closely monitored in those areas. Impacts are mitigated by rotating assigned training areas to minimize damage to surface vegetation and to allow each area to recover naturally (Air Force 1995). This management technique minimizes soil impacts and ensures a sustainable training resource where overuse by vehicle traffic could cause serious damage. Likewise, the use of firing ranges and bivouac areas by training units should have minimal impacts on soils. The vegetative cover in these areas is closely monitored and maintained on a continuous basis.

Clearing vegetation to maintain open spaces for training (primarily removal of ashe juniper) disrupts the soil surface because of bulldozer or tractor activity. This creates the potential for erosion in the short term before the surface vegetation regenerates. Camp Bullis bases the choice and size of equipment used (bulldozers versus severe-duty mowers versus hand cutting) on soil and topographic conditions of the area to be managed. The NRCS has found that soil erosion on sloping land covered by heavy juniper was 10 times that of adjacent areas where juniper had been removed and a 60 percent grass cover established (Nash 1977). The quality of planning and the care taken during brush management determine whether the end results are beneficial or detrimental (Bruns 1999). Given proper planning and care, the long-term benefits from replacing heavy juniper stands with favorable grass species outweigh short-term negative impacts from soil disturbance.

No significant long-term adverse impacts to soils would be expected as a result of the increase in training activities at Camp Bullis.

4.6 AIR QUALITY

4.6.1 Alternative A - No Action

Implementing the no action alternative would not result in any changes to the current air quality in the region. Training operations would continue as described in Section 2.

4.6.2 Alternative B - Proposed Action

Implementation of the proposed action would not significantly alter the attainment status for Bexar or Comal counties or the AQCR of which they are a part. Increases in existing training activities would result in minor increases of dust (PM_{10}) from disturbance to soils and increased combustion emissions (VOCs, CO, SO_2, and NO_x) from the use of tracked and wheeled vehicles. All government vehicles are serviced regularly to reduce the emissions released during operation. Limiting the area of disturbance and watering unpaved roadways during training would reduce

dust in the area. The emissions would be temporary, localized to the specific training area, and likely to disperse rapidly.

Fires managed under the prescribed burn program produce primary pollutants of airborne particulates consisting mainly of charcoal and ash. However, these pollutants disperse quickly. Hydrocarbons are another combustion product, but few, if any, appear in the combustion of woody products that are important in smog-producing photochemical reactions. Carbon monoxide is another pollutant from fires, but it oxidizes readily and does not pose a threat to people, plants, or animals. The main objection to burning appears to be smoke generation, and this can be managed by burning when meteorological conditions are such that smoke is easily dispersed and/or carried away from populated areas. Forest fires, including wildfires and prescribed burns, produce less than 10 percent of all pollutants in the U.S. This percentage is influenced by dryness of fuels at the time of burning; dry fuels burn much cleaner than green fuels. Prescribed burning occurs at Camp Bullis when the majority of vegetation is dormant and dry so that air pollution is kept to a minimum.

4.7 NOISE

When evaluating noise effects, several aspects are examined, including: (1) the degree to which noise levels generated by training and operations, as well as ongoing construction, demolition, and renovation activities, are higher than the ambient noise levels; (2) the degree to which there is hearing loss and/or annoyance; and (3) the proximity of noise-sensitive receptors (i.e., residences) to the noise source. An environmental analysis of noise includes the potential effects on the local population. Such an analysis estimates the extent and magnitude of the noise generated by the proposed action.

An action would have a significant effect if:

- it would produce noise levels high enough to cause occupants or construction workers to suffer permanent hearing loss;
- it would generate traffic that creates a predicted noise level that approaches or exceeds the FWHA Noise Abatement Criteria; or
- it would alter the existing Noise Zone II (65–75 DNL) predicted noise exposure contours on Camp Bullis.

4.7.1 Alternative A - No Action

Under the no action alternative, no increase in usage of Camp Bullis ranges, maneuver areas, training areas, or landing facilities (heliports and CALS) would occur. No construction activities would be undertaken, and existing levels of traffic would remain as is. The existing noise environment would be as described in Section 3.9, and no effect to the noise environment would occur.

4.7.2 Alternative B - Proposed Action

Indirect effects to the noise environment described in Section 3.9 would be expected if the proposed action were implemented. The primary sources of noise at Camp Bullis stem from the operation of weapons qualification ranges and from overflight of military aircraft. Operation of construction machinery and use of tactical vehicles (roadway noise) would be additional sources of environmental noise.

4.7.2.1 *Operation of Construction Equipment*

No particular construction projects or sites have been identified in conjunction with the proposed action. While noise from construction activities can be modeled, it is somewhat meaningless to do so in the absence of a particular site design and location. As noted in Section 3.7, noise associated with construction activities does not typically generate a predicted noise exposure of 65 DNL or greater because, even at extremely high rates of operation, the equipment itself does not generate noise so intense that, averaged over a year, would produce a 65 DNL. In addition, the primary source of ambient noise modeled by the Army is from aircraft operations and use of munitions on ranges, both of which tend to mask noise from construction activities. Since the contribution to the DNL by construction generated-noise would be minimal (<64 DNL) and the location of construction equipment is unknown, it is not possible to determine whether operation of said equipment would cause the existing 65 DNL contour to shift. Therefore, a detailed analysis of construction noise is not performed in this assessment. However, unless the construction equipment is operated at the ranges, adjacent to the existing contours described in the 1999 ENMP, the equipment would not create or shift a 65 DNL contour.

However, it is foreseeable that increased noise from construction activities may temporarily occur as a result of the proposed action. It would result from construction and demolition activities inherent in construction. These activities would produce noise generated by heavy equipment and vehicles involved in demolition, site preparation, foundation preparation, construction, and finishing work. There would be a possibility of short-term, localized speech interference or annoyance near construction zones, but no significant impacts are expected. Additionally, once particular construction projects are identified, including their design and locations, they would become the subject of separate, detailed environmental studies, including an appropriate level of analysis from the effects of construction noise.

In addition, adherence to standard federal and Army occupational safety regulations minimizes the risk of hearing loss to construction workers. These regulations require hearing protection along with other personnel protective equipment and safety training.

Noise-sensitive receptors would only be exposed to construction noise intermittently, and only for the duration of the renovation project; therefore, an extended disruption of normal activities is not anticipated.

4.7.2.2 *Operation of Military Vehicles*

For reasons similar to those discussed previously with construction equipment, the nature of the DNL metric is such that the vehicles would have to operate far in excess of current levels in order for the predicted noise exposure to exceed 65 DNL. Given how the DNL metric averages noise over a 24-hour period, it is not preferred for use in assessing roadway noise because it does not reflect the peak nature of traffic flows.

Instead, the FHWA uses Noise Abatement Criteria (NAC) expressed in terms of $L_{eq(h)}$. The criteria integrate noise exposure to land-use compatibility using the hour of peak traffic flow. The NAC are shown below in Table 4-2.

Strictly speaking, most of Camp Bullis does not have an applicable criterion. It is a military installation, the purpose of which is to train soldiers, sailors, airmen, and marines in the use of their weapons and equipment, and the NAC are oriented toward compatibility with private property. The NAC are, however, useful in providing a standard method of assessing the effects of roadway noise. The ranges, maneuver areas, and training areas would fall into the NAC D category, for which no threshold level of noise has been deemed significant. Land use within the cantonment area would generally be either NAC A or NAC C activities.

Table 4-2. Noise Abatement Criteria (NAC) Hourly A-Weighted Sound Level

Activity Category	$L_{eq(h)}$ dB(A)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above
D	—	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: FHWA 1995

For example, a receiver positioned 20 m from the edge of roadway over which 3,600 M984E HEMMT Trucks (L_{max} 94 dB[A]) were traveling 50 miles/hour for an entire hour would experience an $L_{eq(h)}$ of 68 dB(A) because noise diminishes with distance. This level of activity is unrealistic given the fiscal and operational constraints of military training confronting the units that use Camp Bullis and the actual roadway capacity. The roadway system within the cantonment area does not accommodate this quantity of heavy vehicles operating at these speeds. By definition of the $L_{eq(h)}$ metric, the value diminishes as the traffic counts and vehicle speeds drop and as distances increase.

4.7.2.3 *Expenditure of Ammunition on Ranges*

Current ammunition consumption data for Camp Bullis are not available for analysis. The 1999 ENMP describes the modeling used to predict noise exposure from operation of small arms ranges, explosive simulators, and large caliber munitions. The ENMP describes the Small Arms Range Noise Assessment Model (SARNAM) and MicroBNOISE (used for modeling explosives and large caliber munitions). Those models were used to generate the predicted noise exposure contours described in Section 3.7. The inputs for these models included detailed ammunition consumption data from the 1990s (Army 1999).

Although the proposed action involves increasing the number of trainees that use the Camp Bullis training areas, maneuver areas, and small arms ranges, it is not expected to appreciably alter the noise setting. The nature of the training activities described in Section 2 is not precisely described because it is not yet known. While the trend line for trainee population and utilization (expressed in man-days) is increasing, it is not known whether the 343 TRS (Air Force GCS), the AMEDD C&S, other tenants such as the 1/141 IN (Texas National Guard), or itinerant users would comprise the bulk of the increase. If the increase is due to increases in Combat Medic training (whether Army or Air Force medical personnel), their training is oriented more toward classroom, land navigation, and first-aid rather than toward use of weapons.

In accordance with CEQ regulations (40 CFR §1502.22), it is understood that complete information is not always available. The regulations, anticipating such an occurrence, require decision makers to disclose the data gaps, assess the relevance of the incomplete information and summarize the potential effects from theoretical approaches or research methods. In this case, the uncertainty of the mix of trainees using the Camp Bullis facilities leads to uncertainties about potential adverse effects from increased noise exposure occurring as a result of increased use of ammunition. Despite this uncertainty in the action and its resultant effects, it is not expected that

the proposed action would lead to a significant adverse effect to the noise environment for two reasons.

First, the logarithmic nature of noise indicates that a doubling of noise energy (i.e., doubling ammunition consumption) does not correspondingly double noise levels; if an activity generates a predicted noise exposure of 60 L_{eq}, doubling the activity level increases to 63 L_{eq}. The proposed action represents an increase in man-days from approximately 746,000 to 1,000,000, approximately 33 percent. Second, it is unlikely ammunition consumption would increase in a linear fashion with increased training at Camp Bullis because of training oriented to combat medics. The methodology for assessing the theoretical effects would be to model the noise from operating weapons ranges and assess its effects on human health, land-use compatibility and biological resources. As noted in Section 3, the federal government has relied upon scientific studies of the effects of noise on human health and community annoyance to select the best descriptors depending upon the source of the noise and the type of receiver.

Over time, the incomplete information will be developed as a part of the periodic noise environment assessments conducted by the Army and as part of anticipated but uncertain force structure and tenant changes that may occur under the BRAC process described in Section 2. If those occur, their environmental effects would be assessed under a separate NEPA process when they are finalized. As part of those evaluations, detailed assumptions of the training programs of instruction, doctrine, and force mix would allow for a more meaningful depiction of predicted noise exposure from use of ammunition, aircraft operations, and vehicle operations.

4.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

4.8.1 Alternative A - No Action

Under the no action alternative, conditions at the base regarding hazardous materials and wastes would remain the same, and there would be no significant impacts.

4.8.2 Alternative B - Proposed Action

As mentioned previously, with the increased use of facilities at Camp Bullis, there would be corresponding increases in the quantities of ammunition expended, petroleum products consumed, and utility consumption. An increase in baseline activity would increase the use of chemicals and ordnance at Camp Bullis; however, no significant impacts are anticipated. Disposal of any used or unused chemicals and ordnance would follow established guidelines.

Potential construction projects at Camp Bullis that could release ACMs, lead-based paint, or polluted groundwater into the environment are not directly tied to any increase or decrease in activity at Camp Bullis. Camp Bullis is not proposing to increase the size of its existing training areas or maneuver areas, nor is it proposing to construct additional weapons ranges or impact areas. As funding of construction projects is appropriated, RECs would be prepared and environmental reviews required under NEPA would be performed in conjunction with the design and prior to the execution of the construction and demolition projects.

4.9 HUMAN HEALTH AND SAFETY

4.9.1 Alternative A - No Action

Implementation of the no action alternative would not affect the health and safety of personnel at Camp Bullis. All training and classroom activities would continue in their current state. All troops and personnel would continue to comply with existing safety regulations and guidelines.

4.9.2 Alternative B - Proposed Action

Implementation of the proposed action would result in an increase of training activities at Camp Bullis by approximately 300,000 man-days per year. Since the types of training that occur at the installation would remain the same, impacts to human health and safety are not expected. Safety concerns that result from field combat training include physical injury (sprained ankles, cuts, bruises, etc.), hearing impairment from exposure to high noise levels (aircraft operation, weapons firing, explosives, tracked vehicle operation), whole body vibration from traveling long distances over rough terrain, and inappropriate operation of equipment that could result in physical harm. Safety regulations, guidelines, and standard operating procedures specifically for field training and operation of weapons, equipment, and vehicles are in place to protect the health and safety of troops and nearby personnel. Continued adherence to these guidelines would minimize or mitigate any potential risks associated with training activities at Camp Bullis.

4.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

A socioeconomic effect from a proposed federal action would be considered significant if:

- Extensive relocation of residents is required, but sufficient replacement housing is unavailable;
- Extensive relocation of community businesses would create severe economic hardship for the affected communities;
- Disruptions of local traffic patterns substantially reduce the levels of service of the roads serving the installation and its surrounding communities; and
- A substantial loss in community tax base would result.

4.10.1 Alternative A - No Action

Under the no action alternative, no changes to the operations tempo would occur. The existing level would continue indefinitely, and the programmed level of construction activities would occur. Approximately $15 million of construction/demolition activity is programmed to occur over the next five years (Schlatter 2005a, 2005b). Construction spending would be short-term, with the project duration expected to be between 12-18 months. Therefore, short-term increases in spending and economic flowdown would be expected from implementing this alternative; however, it would be minor and temporary compared to regional economic generation. In a local economy that is generating over $41 billion of aggregate personal income annually, the project cost and associated spin-off and economic activity multiplier effects are not significant. The socioeconomic conditions would remain essentially as is and there would be no potential for a disproportionate impact to minority or low-income populations.

4.10.2 Alternative B - Proposed Action

The proposed action, increasing the utilization rates of Camp Bullis, would result in a slight, temporary increase in economic activity. The direct effects would be those tied to increased consumption of ammunition, petroleum, subsistence, and utilities. Indirectly, depending upon the mix of users (e.g., users drawn from the Army and Air Force medical trainee population versus reserve component mobilizing units), there may be potential for increased spending on lodging and meals. However, it should be noted that two factors limit the socioeconomic effects from increasing utilization of Camp Bullis. First, the bulk of the utilization of Camp Bullis occurs from soldiers, sailors, and airmen that are already temporarily stationed at military installations in the San Antonio region undergoing military schooling (e.g., airmen in basic training at Lackland

AFB and soldiers in advanced individual training at Fort Sam Houston). They would not generate an increased demand for housing, public schools, libraries, and similar municipal services because their stay at Camp Bullis is relatively short. Their economic activity occurs primarily at their homes of record, which usually are their hometowns, and secondarily at the basic training base (e.g., Lackland AFB and Fort Sam Houston). Second, most of the other users of the Camp Bullis facilities are reserve component (including National Guard) soldiers whose residences are already in the San Antonio region. Therefore, while short-term increases in spending and economic flowdown would be expected from implementing this alternative, it would be minor and temporary compared to regional economic generation. The transient nature of the trainee population and users of Camp Bullis limits their potential spending to sundries and souvenirs. In a local economy that is generating over $41 billion of aggregate personal income annually, the project cost and associated spin-off and economic activity multiplier effects are not significant. Apart from spending from the soldiers, sailors, and airmen who use Camp Bullis, a slight increase in local purchases by the installation would be anticipated from implementation of the proposed action. The proposed action involves an increased level of activity at Camp Bullis which would lead to increase expenditures on local purchases of services commodities consumed at Camp Bullis.

The proposed action would not require any relocation of local residents or commercial enterprises. The level of traffic generated from tactical and non-tactical military vehicles, construction vehicles, and workers would be minor and is not expected to alter the levels of service on local roadways, whether on or off Camp Bullis. The community tax base (real estate and sales taxes) would not be appreciably altered; federally owned real estate is exempt from taxation at the local level. To the extent that increased use of services and supplies (e.g., ammunition, subsistence, petroleum products, and construction materials) were taxed, a slight benefit would accrue to the taxing jurisdiction.

Since there would be no adverse significant effects anticipated from the proposed action, there would be no disproportionately adverse impacts to minority and low-income populations; therefore, there would be no environmental justice concerns from implementing this alternative.

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5.0 CUMULATIVE IMPACTS

The CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such other actions" (40 CFR §1508.7). CEQ guidance states that the first steps in assessing cumulative effects should involve defining the scope of the other actions and their interrelationship with the proposed action (CEQ 1997). The scope must consider geographic and temporal overlaps among the proposed action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects most likely arise when a proposed action and other actions are expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the ROI includes Bexar and Comal counties. Beyond determining that the geographic scope and time frame for other actions interrelate to the proposed action, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, State and local government agencies form the primary sources of information regarding reasonably foreseeable actions. The installation staff at Camp Bullis and Fort Sam Houston also were consulted (Schlatter 2005a, Schlatter 2005b, Schlatter 2005c).

5.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

The activities described herein serve to highlight major influences in the region and to provide perspective on the contribution to any impacts generated by the proposed action.

Fort Sam Houston and its sub-installation, Camp Bullis are continuously evolving to meet the demands of GWOT and the Army's initiatives for transformation into a lighter, more lethal fighting force. Accordingly, construction activities associated with the creation and maintenance of training areas, buildings, and other facilities are commonplace. On Camp Bullis, the creation of a Basic Combat Convoy Course (BC3) and a Basic Combat Convoy Course with Lifesaving is a typical. Operational experience in overseas theaters of war lead to different or increased training requirements which in turn leads to changes in doctrine and creation of training scenarios, programs of instruction and training areas. The BC3 and BC3+ entailed creation of a 130+ acre site in Maneuver Area 3 on the western edge of the post. In this area, a replica of an austere base operating area would be created and approximately 310 students would run through the exercise per week. An EA prepared in November 2004 indicates that no significant impacts from that action were expected. The resource areas that would be most affected are thought to be water resources, earth resources, air quality and noise. The land disturbing associated with the construction of the site and the activities assocatied with operation of the training venue (simulated small arms noise, vehicle operations, weapons firing) account for these effects. (Army 2004a)

Another action that is occurring on Camp Bullis is the construction of a training venue (called a Medical Modified Urban Assault Course [MUAC]) for increasing proficiency in locating, treating, and evacuating casualties from above, below, and at ground level in an urban setting.

The emphasis of the training is focused on core medical skills as well as Soldier survival skills in Military Operations in Urban Terrain. An EA prepared in September 2004 indicates that no significant impacts from that action were expected. Similar to the BC3/BC3+ training venue, construction of the MUAC is expected to have minor effects on earth resources, water resources, air quality and noise. (Army 2004b)

Planned construction activities for FY 2006-2011 are presented in Table 5-1. Projected demolition activities are shown in Table 5-2.

Table 5-1. Projected Construction on Camp Bullis (FY 2005-2010).

Project DD 1391#	PA $M,	Project Name	Mission or BASOPS	FY 05 FYDP	FY 06 FYDP
18166	1,427	Vehicle Maint. Shop, Camp Bullis	Mission	2009	2009
18165	5,300	MOUT Training Facility, Camp Bullis	Mission	2008	2008
52036	7,000	Dining Facility, Camp Bullis	BASOPS		2010
16946		Physical Fitness Center, Camp Bullis	BASOPS	2008	

DD 1391 = Military Construction Datasheet
$M = Dollars (in millions)
FYDP = Five-Year Development Plan
PA = Programmed Amount
BASEOPS = Base operations (as contrasted with Mission Activities funding source)
Source: Schlatter 2005a

Table 5-2. Projected Demolition on Camp Bullis (FY 2006-2010).

FY	Building #
2006	None
2007	None
2008	5105, 6202, 6203, 6214, 6252, 6256, 5107, 5105
2009	6008, 6101, 6104, 6106
2010	5124

Source: Schlatter 2005b

The activities and missions at Camp Bullis continue to evolve over time. It is foreseeable that, as military force structure and doctrine continues to change as the result of operational experience gained as a result of the Global War on Terrorism, the precise nature of the units that rely upon Camp Bullis and the activities in which they engage will also change. Absent a decision to close the installation under the auspices of BRAC, it is likely that training areas will be constructed to match the facilities to the demands from the course syllabi. As part of the development process for a new training course or construction of a range, training area, maneuver area, or other permanent infrastructure improvements, the anticipated impacts (if any) would be assessed as required by NEPA and the results furnished to the decisionmaker prior to undertaking a decision.

5.2 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

The NEPA requires that environmental analysis include identification of "…any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future

generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a T&E species or the disturbance of a cultural site).

For the proposed action, most resource commitments are neither irreversible nor irretrievable. Most impacts are short-term and temporary, or longer lasting but negligible. The proposed action would require the use of fuels for vehicle and aircraft operations at Camp Bullis. This fuel would be used as long as military activities occur at Camp Bullis. Although no specific construction projects have been identified with the proposed action, any construction and renovation activities would require the expenditure of fuels as well as other materials at Camp Bullis. There would be irreversible or irretrievable commitments of construction materials such as concrete, sand, bricks, steel, and other materials used for renovation such as insulation, wiring, and paint. The use of human resources for facility construction is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. As noted previously, construction activities would receive their own environmental analysis as their design takes shape and prior to their commencement. However, the use of human resources for the proposed action represents employment opportunities and is considered beneficial

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APPENDIX A – INTERAGENCY COORDINATION LETTERS

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APPENDIX B – SOCIOECONOMIC ANALYSIS

Socioeconomic analyses generally include detailed investigations into the prevailing social and economic conditions of a community of interest. Such investigations examine the population, income, employment, and housing characteristics of an area. The prevailing social and economic conditions may be affected by the implementation of a proposed federal action. Additionally, populations of special concern as defined in Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 1994), are examined to determine whether impacts fall disproportionately upon these populations.

EO 12898 requires a federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations." A message from the President concerning EO 12898 stated that federal agencies should collect and analyze information concerning a project's effects on minorities or low-income groups, when required by the National Environmental Policy Act (NEPA). If such investigations find that minority or low-income groups experience a disproportionate adverse effect, then avoidance or mitigation measures are to be taken.

According to the Council on Environmental Quality (1997), a minority population can be described as being composed of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic, and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population. Race and ethnicity are two separate categories of minority populations. A minority population can be defined by race, by ethnicity, or by a combination of the two distinct classifications.

Race as defined by the U.S. Census Bureau (2001) includes:

- White – A person having origins in any of the original peoples of Europe, the Middle East, or North Africa;
- Black or African American – A person having origins in any of the Black racial groups of Africa;
- American Indian or Alaska Native – A person having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment;
- Asian – A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, or the Philippine Islands; and
- Native Hawaiian and Other Pacific Islanders – A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

The U.S. Census Bureau (USCB) defines ethnicity as either being of Hispanic origin or not being of Hispanic origin. Hispanic origin is defined as "a person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin regardless of race" (USCB 2001).

A minority population can be defined in multiple ways; for example, a population under consideration may be demographically composed of 45 percent Black, 6 percent Asian, 40 percent White, and 9 percent all other races or combination of races. Additionally, a minority population can also be defined through ethnicity, where the population under consideration is demographically composed of 80 percent White, 10 percent Black, and 10 percent all other races

or combination of races, but has an ethnic composition of 98 percent Hispanic origin and 2 percent of the population not of Hispanic origin. Race and ethnicity each individually total a population of 100 percent.

Each year the USCB defines the national poverty thresholds, which are measured in terms of household income dependent upon the number of persons within the household. Individuals falling below the poverty threshold ($17,603 for a household of four in 2000) are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as *poverty areas* (USCB 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract becomes an *extreme poverty area*.

The region of influence (ROI) for a socioeconomic analysis depends upon the context and intensity of the proposed action and its alternatives. For a minor construction project, census tract level analysis in the context of a more regional setting is appropriate. The Camp Bullis socioeconomic ROI includes Census Tract 1916 which captures almost all of Camp Bullis and the adjacent Camp Stanley recreational area in the context of the Bexar County (San Antonio) region. It should be noted that this census tract contains an unusually low population given the lack of structures intended for permanent residential occupancy on the Camp Bullis and Camp Stanley recreational area; in 2000, only 16 residents were enumerated for this census tract (USCB 2002). Given this unusual circumstance of a small set of data, the inclusion of adjacent census tracts for context is warranted.

The ROI for the socioeconomics analysis is a comparison of the Bexar County characteristics with those of Camp Bullis and adjacent census tracts. Figure B-1 shows the census tracts in the vicinity of Camp Bullis. All data are derived from the 1990 and 2000 Census of Population and Housing and the most recent local area personal income data (1990-2000) from the Bureau of Economic Analysis (BEA).

Population and Demographics

The population within the San Antonio Metropolitan Statistical Area (MSA) increased considerably between 1990 and 2000. During this 10-year period, the population grew from approximately 1.3 million to 1.6 million residents, or about 22 percent. Table B-1 presents the population data for the San Antonio MSA (Bexar, Comal, Guadalupe, and Wilson counties), and Bexar County which includes the City of San Antonio and certain unincorporated areas. Table B-2 presents the same data for the census tracts that include and surround Camp Bullis. The data show that the area surrounding Camp Bullis is experiencing a growth rate that is faster than that of Bexar County or the MSA as a whole.

The Camp Bullis ROI includes the San Antonio MSA, Bexar County, and USCB Census Tract 191600, block group 1, which contains Camp Bullis, and adjacent census tracts [4] and block groups[5]. The population within the combined census tracts containing the Camp Bullis ROI increased 87.56 percent between 1990 and 2000, while the combined block groups increased 203.21 percent during this period (USCB 1993, 2002). Neither the combined census tracts nor block groups would be considered a concentrated minority area.

[4] USCB 2000 Census Tracts immediately outside Camp Bullis include 191804, 191805, 191803, 182101, and 310700.

[5] USCB 2000 Census block groups immediately outside Camp Bullis include block groups 1 and 2 in Census Tract 191804, block group 2 in Census Tract 191805, block groups 1-3 in Census Tract 191803, block group 1 in Census Tract 182101, and block group 2 in Census Tract 310700.

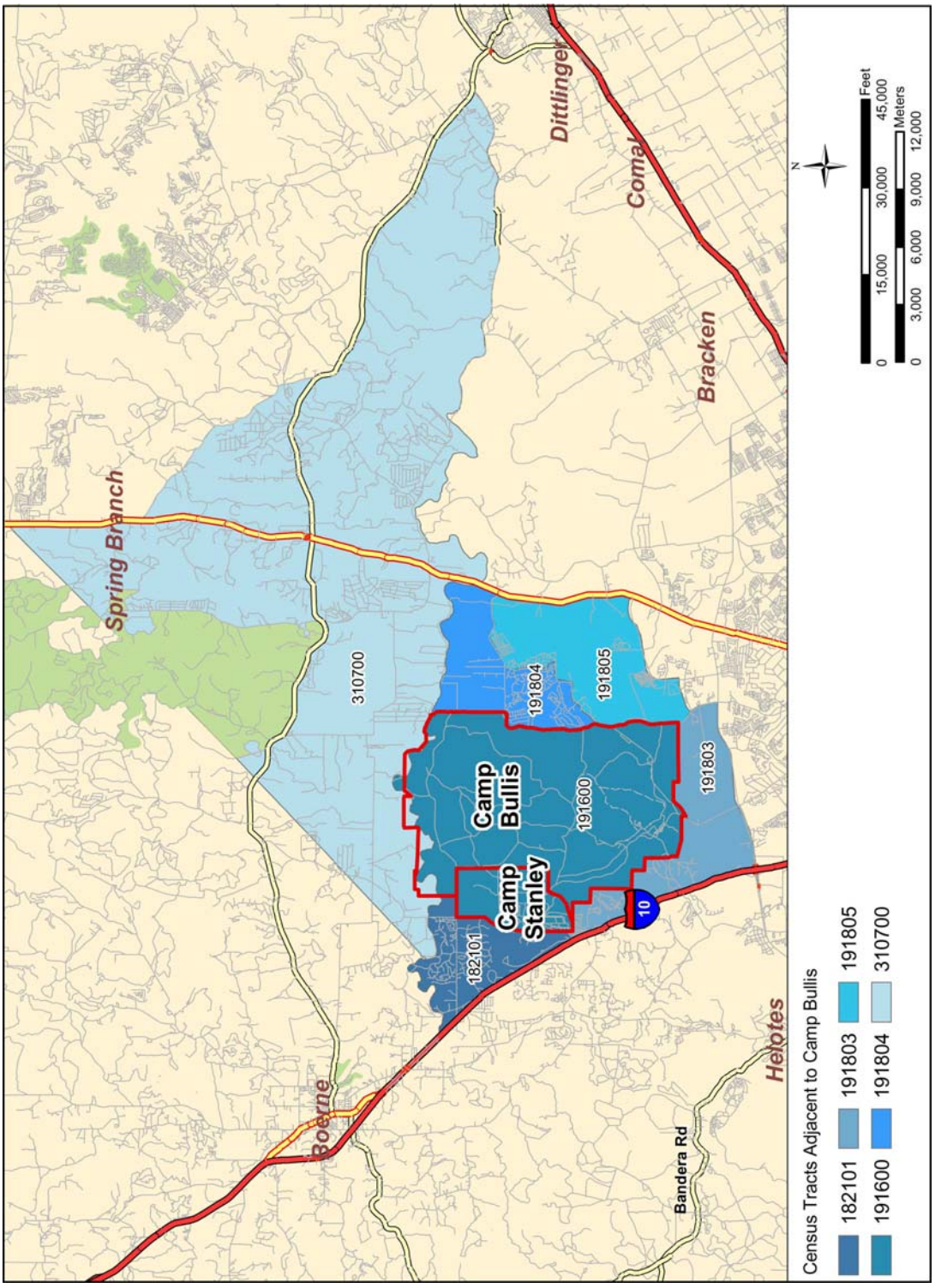

Figure B-1. USCB 2000 Census Block Groups Within and Surrounding the Camp Bullis ROI.

Table B-1. Demographic Profile of the Fort Sam Houston ROI.

	San Antonio MSA				Bexar County			
	1990		2000		1990		2000	
	Number	%	Number	%	Number	%	Number	%
White, non-Hispanic	579,291	44.5	626,073	39.3	498,512	42.1	495,275	35.6
Black/African American	88,709	6.8	103,110	6.5	84,600	7.1	97,705	7.0
American Indian or Alaska Native	4,673	0.4	10,702	0.7	4,379	0.4	9,547	0.7
Asian	16,020	1.2	24,078	1.5	15,229	1.3	22,586	1.6
All Other Races or Combination of Races	613,406	47.1	828,420	52.0	582,674	49.2	767,818	55.1
Hispanic	616,878	47.4	815,980	51.2	586,124	49.4	757,004	54.3
Total Minority Population	722,808	55.5	966,310	60.7	686,882	57.9	897,656	64.4
Total Population	1,302,099		1,592,383		1,185,394		1,392,931	

Source: USCB 1993, 2002

Table B-2. 2000 Demographic Profile of the Camp Bullis ROI.

Decennial Census Population	Combined Census Tracts		Combined Block Groups	
1990	18,817		8,261	
2000	35,293		25,048	
Percent Increase	87.6		203.2	
Race/Ethnicity	**Number**	**Percentage**	**Number**	**Percentage**
White, non-Hispanic	28,202	79.91	19,660	78.49
Black/African American	375	1.06	326	1.30
American Indian or Alaska Native	110	0.31	56	0.22
Asian	450	1.28	395	1.58
Native Hawaiian or Other Pacific Islander	25	0.07	11	0.04
All Other Races or Combination of Races	648	1.82	511	2.04
Hispanic	5,487	15.55	4,089	16.32
Total Minority Population	7,091	20.09	5,388	21.51

Source: USCB 1993, 2002

In August 2000, EO 13166 *(Improving Access to Services for Persons with Limited English Proficiency [LEP])* was signed. This EO requires that federal agencies improve the accessibility of federal programs to eligible LEP individuals. Additionally, this EO also requires federal agencies to ensure that stakeholders, such as LEP individuals and their representative organizations, recipients, and other appropriate individuals or entities, have an adequate opportunity to provide input. These consultations will assist the agencies in developing an approach to ensure meaningful access by LEP individuals that is practical and effective, is fiscally responsible, is responsive to the particular circumstances of each agency, and can be readily implemented.

In 2000, approximately 40,938 households (7.3 percent) in the San Antonio MSA and 38,043 households (7.8 percent) in Bexar County were considered linguistically isolated[6] (USCB 2002). Within the Camp Bullis ROI, 141 households (1.16 percent) were considered linguistically isolated within the combined census tracts (USCB 2002). Within the combined block groups of the Camp Bullis ROI, 57 households (0.66 percent) were considered linguistically isolated. Table B-3 lists the number of linguistically isolated households per area by language.

Table B-3. Linguistically Isolated Households by Area and Language.

Language	San Antonio MSA (#/%)	Bexar County (#/%)	Camp Bullis ROI	
			Combined Census Tracts (#/%)	Combined Block Groups (#/%)
Spanish	37,766 / 92.3%	35,190 / 92.5%	107 / 75.9%	39 / 68.4%
Other Indo-European	1,185 / 2.9%	940 / 2.5%	29 / 20.6%	13 / 22.8%
Asian/Pacific Island	1,780 / 4.4%	1,706 / 4.5%	5 / 3.6%	5 / 8.8%
Other	207 / 0.5%	207 / 0.5%	0 / 0.0%	0 / 0.0%
Total Linguistically Isolated Households	40,938 / 7.3%	38,043 / 7.8%	141 / 1.2%	57 / 0.7%
Total Households	560,293	489,252	12,142	8,572

Source: USCB 2002

The average household size within the San Antonio MSA was 2.84, and in Bexar County, it was 2.85 in 2000 (USCB 2002). Average household size in both combined areas for the Camp Bullis ROI was 2.91 persons per household. Extrapolating average household size and the number of linguistically isolated households gives an estimated number of linguistically isolated individuals in all areas (Table B-4).

Table B-4. Linguistically Isolated Individuals by Area and Language.

Language	San Antonio MSA	Bexar County	Camp Bullis ROI	
			Combined Census Tracts	Combined Block Groups
Spanish	107,256	100,292	311	113
Other Indo-European	3,365	2,679	84	38
Asian/Pacific Island	5,055	4,862	15	15
Other	588	590	0	0
Total Linguistically Isolated Individuals	116,264	108,423	410	166
Total Individuals	1,592,383	1,392,931	35,293	25,048

Source: USCB 2002

Income and Employment

Median personal income levels increased within all household types in the ROI between 1990 and 2000. The largest nominal percent changes were observed in the San Antonio MSA. Table B-5 lists the 1990 and 2000 median personal incomes across household types and nominal percent changes during this period. In the Camp Bullis ROI, the highest median household income in the

[6] A linguistically isolated household is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English "very well." In other words, all members 14 years old and over have at least some difficulty with English (USCB 2002).

combined census tracts was $109,424 (USCB Census Tract 191803), while the lowest median household income was $64,953 (USCB Census Tract 310700) (USCB 2002). Within the combined block groups of the Camp Bullis ROI, the highest median household income was $121,829 (block group 3, USCB Census Tract 191803) and the lowest was $67,619 (block group 2, USCB Census Tract 310700) (USCB 2002). The Per Capita Personal Income (PCPI) ranged within the Camp Bullis ROI combined census tracts from a high of $53,462 (USCB Census Tract 191803) to a low of $26,849 (USCB Census Tract 310700) (USCB 2002). The PCPI within the combined block groups of the Camp Bullis ROI was within a similar range.

Table B-5. Median Personal Income Levels by Household Type within the ROI.

	San Antonio MSA			Bexar County		
	1990 ($)	2000 ($)	Nominal Percent Change	1990 ($)	2000 ($)	Nominal Percent Change
Median Household Income	26,092	39,140	50.0	25,926	38,328	47.8
Median Family Income	29,952	44,729	49.3	29,717	43,724	47.1
Median Non-family Income	16,838	25,405	50.9	17,077	25,575	49.8
Per Capita Personal Income	11,865	18,518	56.1	11,827	18,363	55.3

Source: USCB 1993, 2002

Earnings data indicated personal income within the San Antonio MSA increased by approximately 89 percent between 1990 and 2000, to $41.1 billion (BEA 2002a). Within Bexar County, personal income increased by approximately 85 percent during this period to $36.3 billion (BEA 2002a). Non-farm income increased approximately 90 percent during this period in the San Antonio MSA to approximately $41 billion and 85 percent in Bexar County to approximately $36 billion (BEA 2002a). Farm income increased 187 percent to approximately $74 million in the San Antonio MSA and increased 238 percent to approximately $60 million in Bexar County during this period (BEA 2002a). The industries with the greatest increase in earnings between 1990 and 2000 in both the San Antonio MSA and Bexar County were Agricultural Services, Mining, Construction, and Transportation and Public Utilities (BEA 2002a). Only federal, civilian earnings decreased in both the San Antonio MSA and Bexar County (BEA 2002a).

Total full-time and part-time employment increased approximately 35 percent in the San Antonio MSA and approximately 34 percent in Bexar County between 1990 and 2000 (BEA 2002b). Substantial increases in employment were identified in Agricultural Services, Construction, Transportation and Public Utilities, and Services in both the San Antonio MSA and Bexar County during this period (BEA 2002b). Decreases in employment opportunities were identified in Mining, Federal, Civilian, and Military in both the San Antonio MSA and Bexar County between 1990 and 2000 (BEA 2002b).

The poverty rate decreased approximately 4 percent in Bexar County, to 15.9 percent, and 2.5 percent in the San Antonio MSA, to 15.1 percent, between 1990 and 2000 (USCB 1993, 2002). Within the Camp Bullis ROI, the 2001 poverty rate within the combined census tracts was 3.01 percent, and within the combined block groups, it was 2.18 percent in 2000 (USCB 2002). This is significantly below the MSA or Bexar County averages; therefore, the census tracts surrounding Camp Bullis are not considered a poverty area.

APPENDIX C – NOTICE OF AVAILABILITY AND AFFIDAVIT OF PUBLICATION

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